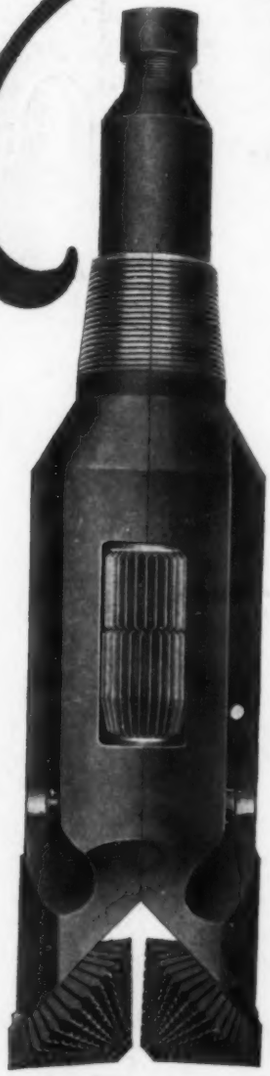
A Journal for
Oil and Gas Producers and Field Men

The OIL WEEKLY

June 12, 1925 — 10 Cents A Copy

Dependable



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Are a distinct improvement over the regular type of travelling block with spring casing hook.

"OILWELL" Spring Travelling Blocks have *two* springs which result in more uniform spring action. Though large in size and extremely powerful, they are shorter overall when equipped with any common casing hook than a regular travelling block with spring casing hook. The lower clevis is so arranged that any common casing hook can be readily attached.

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The 66″ block is so constructed that the spring attachment can be swung over to the side and the block stood on end when stringing the lines.

For further information inquire at any of our 100 Branches.

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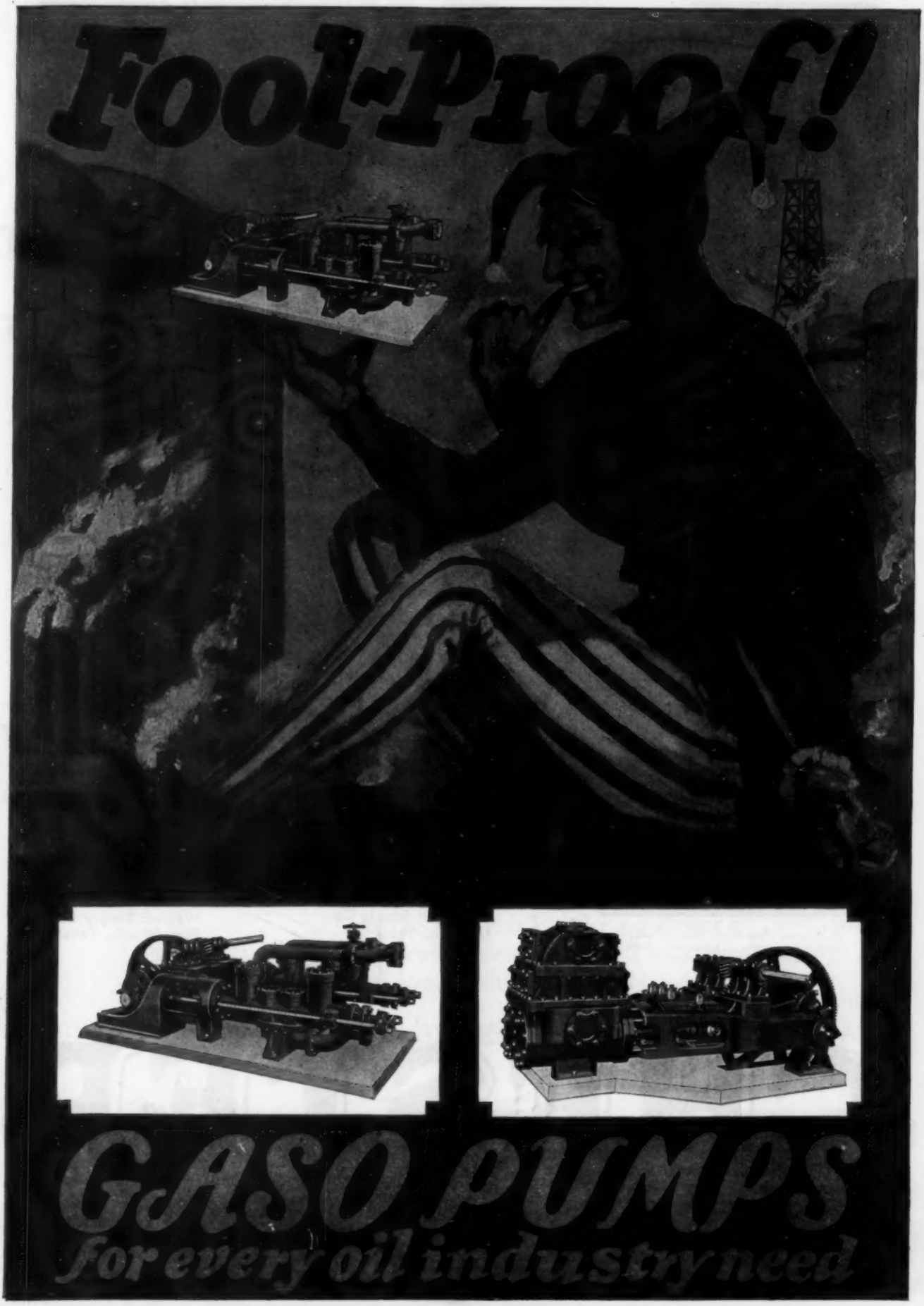
WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

THE OIL WEEKLY. Issued weekly by the Gulf Publishing Co., 1716 Dallas Ave., Houston, Texas. Subscription price $1.00 per year; 10 cents per copy. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.



Say you saw it in The Oil Weekly

Why Chester Steel Casing Is Good Casing

Chester Casing is made from a special analysis steel, which our experience as specialists in casing manufacture has demonstrated will best withstand the rigors of deep well drilling.

This Chester Steel is stiff enough to hold shape but not of such a character as to tend to crystallize or fracture. It stands unusual strains better and eliminates the common trouble of collar jumping.

Our Distributors Carry A Complete Range of Stock.

Southwest Petroleum No. 1, near Taft, California. Equipped with Chester Steel Casing.

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Also Makers of Wrought Iron Casing from 4½" to 12½"

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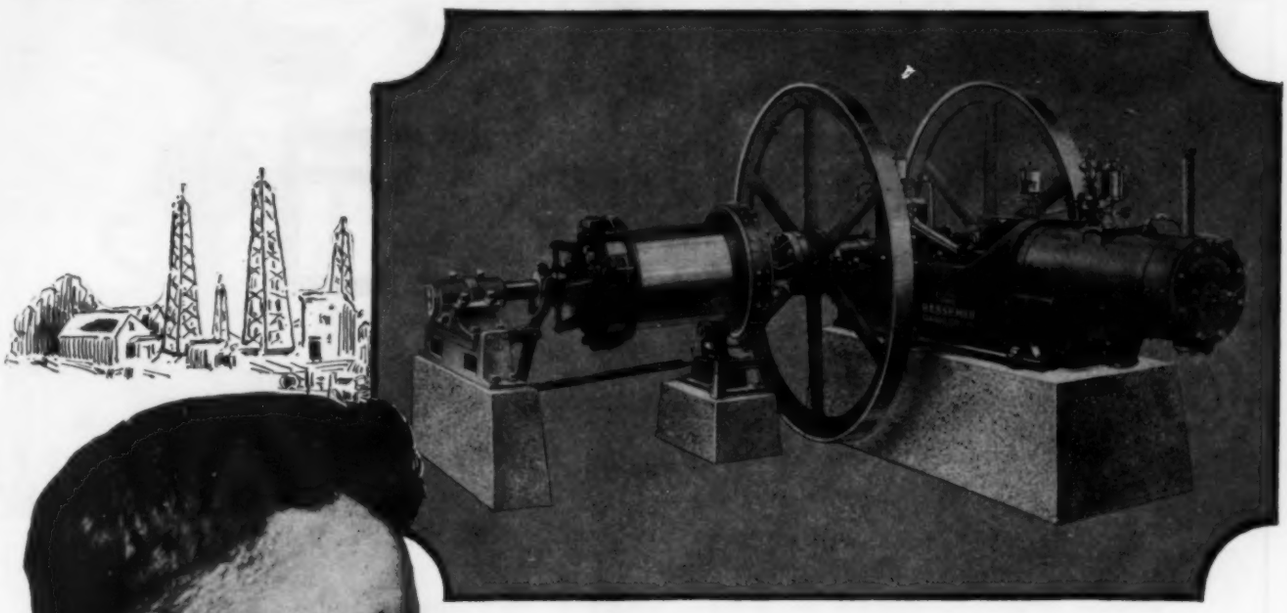
CHESTER

STEEL CASING

SPECIALISTS IN CASING FOR DEEP WELL DRILLING



"Our Oldest Bessemers Give us Better than 99% Running Time"

SUCH is the statement of a District Foreman at El Dorado—a man old in the oil industry and gas engine experience.

When the equipment is Bessemer, you are assured 99% + running time from the start for years to come. It is running time that pays profits—that's why Bessemer users are money ahead and continue to standardize on Bessemers.

Insure your oil field equipment investment by buying Bessemers. Their extra savings cost you less in the long run.

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Say you saw it in The Oil Weekly

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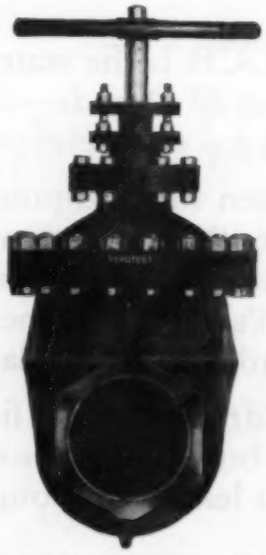
MEANS SAFETY!

Why fool with inferior valves when KEROTEST Valves and Fittings insure utmost safety?

KEROTEST valves are of the wedge-gate type, insuring full opening and positive closing as well as perfect freedom for passage of the swab.

Every KEROTEST Valve is kerosene tested under high pressure—an important factor to absolutely protect you against losses due to sudden gas pressures.



Specify KEROTEST as part of your standard equipment.

Our catalog tells the story —for safety's sake—ask for it!

Pittsburgh Reinforced Brazing and Machine Co.

Pittsburgh, Penna.

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Just what the name implies!

LUNKENHEIMER "RENEWO" Valves

When you buy Lunkenheimer "Renewo" Valves you are doubly insured against all the unfavorable conditions to which bronze valves for pressures up to 200 or 300 pounds, 500° F., are customarily subjected.

First—The "Renewo" will outlast other valves before repairs are necessary.

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Nickel seat and disc are regularly furnished, but when the valves are used for throttling purposes, these parts are of special design and are made of monel metal.

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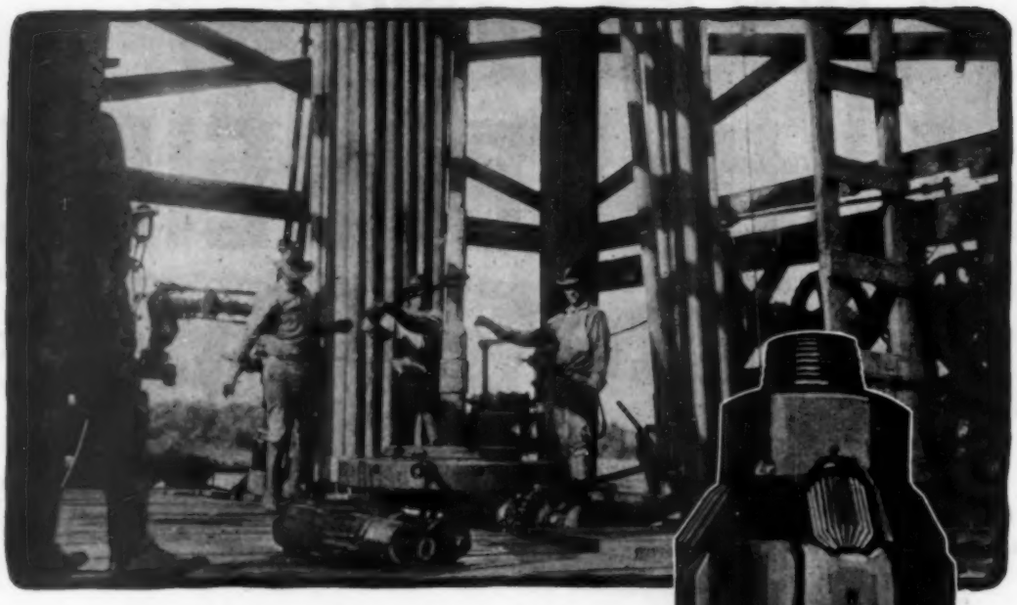

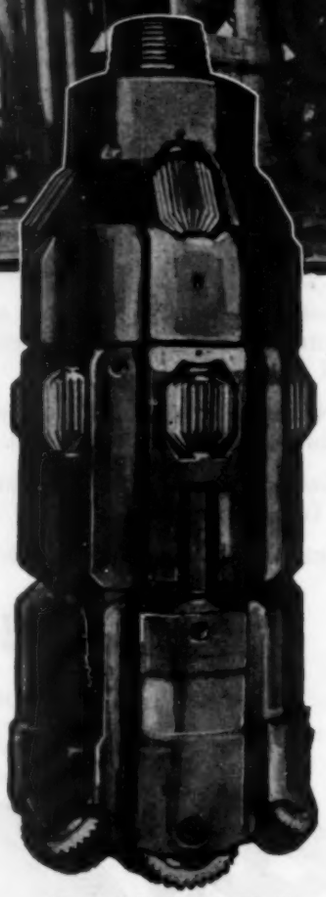

Largest Roller Bit in the World. Bores 24-inch hole. Made of Agathon Alloy Steel by Reed Roller Bit Co., Houston, Texas

Agathon Alloy Steel Used In World's Largest Bit

The fact that an Agathon Alloy Steel was used in making the world's largest rotary bit has its significance. In many of America's famous oil fields you will find the most severe drilling being accomplished with Agathon Alloy Steel bits. Ask for the assistance of our metallurgists in selecting the proper alloy steel for your bits, joints, jars, etc. Get our booklet—"Agathon Alloy Steels."

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AGATHON ALLOY STEELS

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Equip your old "standbys", your experienced veterans, with ***Genuine*** Williams' "Vulcan" Back-Up Tongs and you will have an unbeatable combination.

The Handle is short and stubby—just the right size.

Five Sets of the Chain Links, also Alloy Steel Swinging Link for attaching chain to through bolt, are much larger than regular, thus providing greater bearing on pipe or casing, and increased strength at point of greatest working stress.

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Why trust to a less trusty tool; Equip your men with the very best and receive their best in return.

Literature?

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"VULCAN"
BACK-UP WRENCH

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"The Wrench People"
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—Show Up Best In The Very Hardest Lime and Sand

Shale, hard lime and sand surely raise "hobs" with the average welded drilling jar.

But you ought not blame them, they are made that way.

On the other hand, the Spang Weldless Jar is so constructed that it shows to decided advantage when used on wells where such conditions abound.

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SPANG Weldless Jars seldom break or fail. They are made from a single piece and carefully inspected and tested for all flaws of manufacture.

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- Elimination of Jar Fishing jobs
- Reduction of drilling risk
- Three to five times as much service as other jars
- Increased profits

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Protect your Tool Joints with SPANG Thread Protectors. *Like all SPANG Products they guarantee absolute satisfaction and long, durable service.*

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Oil Field Supplies And Complete Field Equipment

Both Rotary and Cable

Insures you Quick Dependable Service at all times

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REPUBLIC SUPPLY CO

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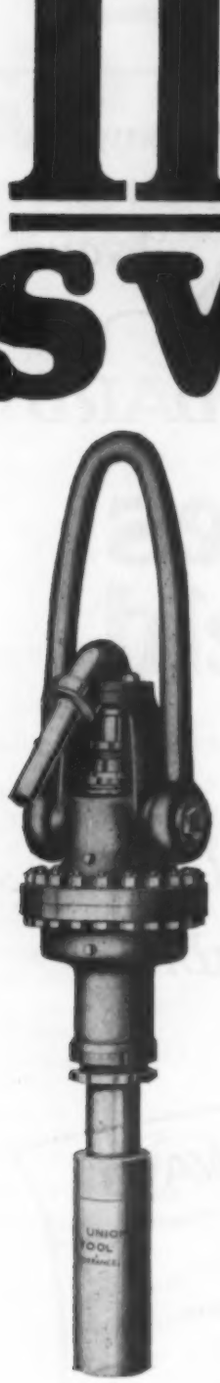
IDEAL SWIVELS



Built for heavy duty, they render long continuous service under most severe conditions.

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Crain sectional (portable) houses for industrial purposes

Crain Ready-Cut houses (not portable) for permanent homes

Crain Sectional Houses used as Workmen's Homes by a Large Operator in South Liberty Field. This same operator uses Crain Sectional Buildings for Warehouses, Mess Halls, Bunk Houses, Fuel Storage, and many other purposes.

CRAIN
SECTIONAL BUILDINGS
(PORTABLE)

—are shipped to you in ready constructed units that can be quickly assembled by unskilled workmen.

—can be knocked down, moved and reassembled on another location—thus yielding practically full salvage.

—are carried in stock at all times, shipped on receipt of your order.

Write for Catalog of Plans and Prices.

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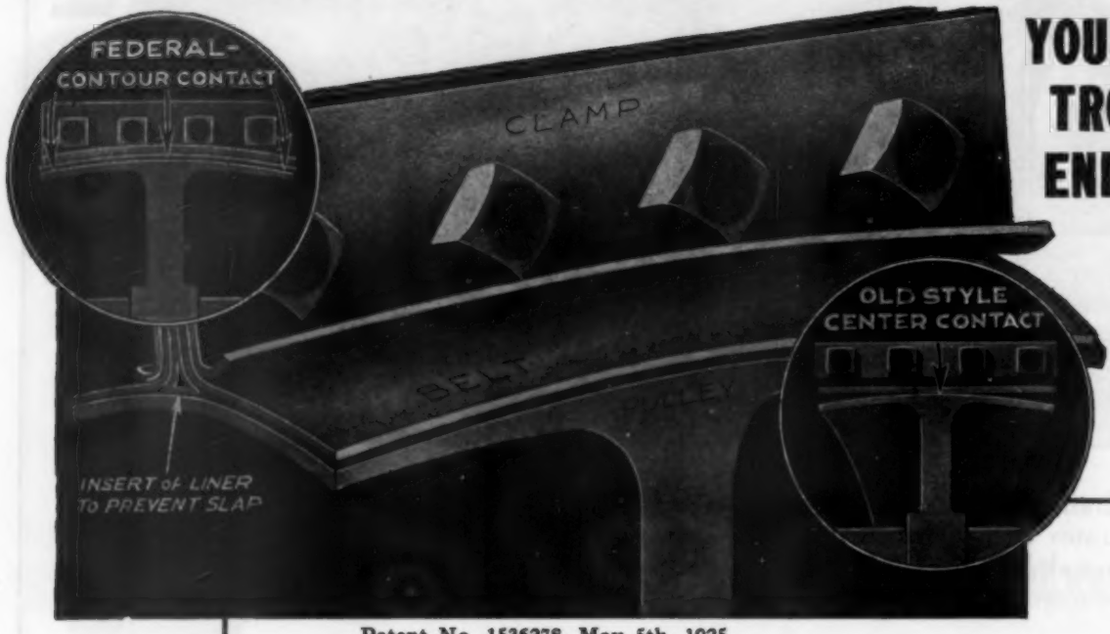
FEDERAL BELT CLAMPS



YOUR CLAMP TROUBLES END HERE!

"The Curve on the Clamp Fits the Crown on the Pulley"

Patent No. 1536278, May 5th, 1925

BY a close study of the illustration you will observe that the FEDERAL BELT CLAMP is designed with a curve on the face to correspond with the crown on the belt pulley, thereby preventing side slip on pulley and keeping the belts from sliding on shoes of clutch. In the lower right hand corner of the illustration you will note the construction of the old style belt clamp, with its straight bars and sharp edges, which cuts the belt on the pulley side every time it passes over the pulley. These cuts permit air to enter the plys of the belt and each revolution means an additional blow as the belt passes over the pulley, forcing the air further into the plys, which forms air pockets and causes bootlegging.

YOU will also notice the "liner" which is inserted between clamps on the FEDERAL BELT CLAMP. This "liner" holds the belt firmly against the curve on the outside clamp and forms an uninterrupted curved surface fitting smoothly against the curve of the pulley.

THE material used in FEDERAL BELT CLAMPS is pressed steel, drilled and fitted with 5/8-inch HEAT TREATED STEEL BOLTS and lock washers.

YOUR clamp troubles will end when you equip your belts with FEDERAL BELT CLAMPS. You will eliminate bootlegging and increase the efficiency and prolong the usefulness of your belts.

ONE or two infringements and imitations of the FEDERAL BELT CLAMP have appeared on the market which have confused the uninitiated buyer as to "which is which". A comparison of any of these articles with the genuine FEDERAL BELT CLAMP will quickly reveal the difference. The superiority of the FEDERAL is too obvious to admit of argument. Unless it is a "FEDERAL BELT CLAMP" it is an inferior product.

At Your Supply Store

Beware of Imitations and Infringements!

THE FEDERAL SUPPLY COMPANY

FORT WORTH, TEXAS MANUFACTURERS MEXIA, TEXAS

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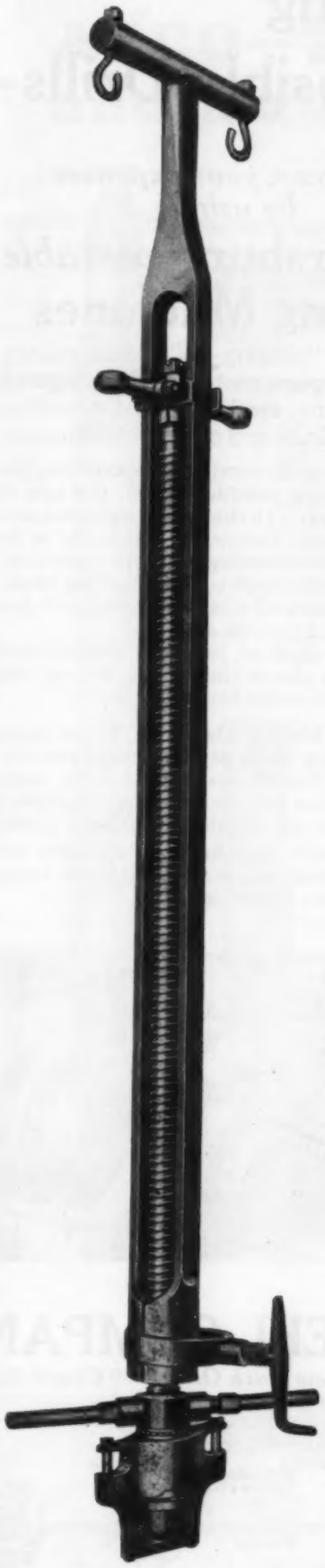

THE BURNS PATENTED TUBULAR TEMPER SCREW

Designed to be practical by a man of several years drilling experience.

Constructed of the best material and workmanship, guaranteeing to the user the very best Temper Screw to be found.

The number of working parts has been reduced to a minimum, thus insuring simplicity and ease of operation.

In daily use in domestic and foreign fields and giving absolute satisfaction.

TEMPER BURNS SCREW

For Sale by All Supply Companies

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BURNS TOOL COMPANY

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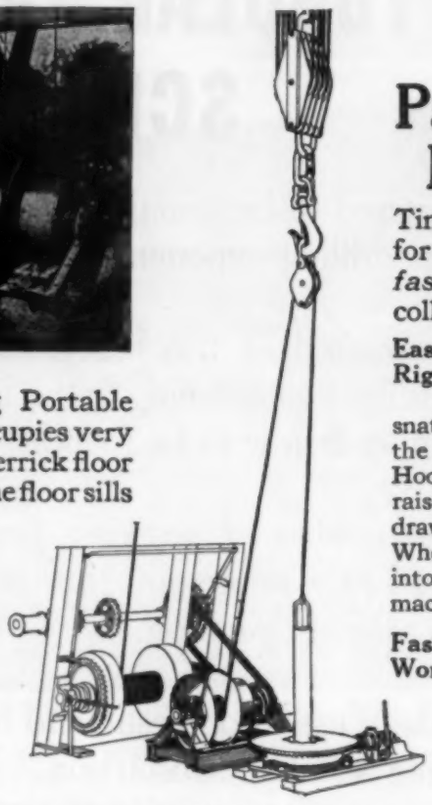
For Rotary Bailing, Swabbing and Handling Collapsible Drills—



Cut down your expenses by using

Parkersburg *portable* Bailing Machines

Time saved "rigging-up" means money for you! It pays to take advantage of *faster* bailing, swabbing and handling collapsible drills and core barrel carriers.

Easy to Rig-up After the sand line is spooled on the bailing machine drum, the end is passed through a single-sheave snatch block and fastened to the bailer or to the swab—all depending upon the operation. Hook the snatch block to the travelling block, raise the blocks with the drawworks; lock the drawworks and *you're all set!*
When you've finished, just skid the machine into a corner. Store the bailing line on the machine drum — the best place for it.

Fast Work The friction clutch on Parkersburg Bailing Machines transmits a remarkably flexible power, permitting faster work than can be safely accomplished with the use of the drawworks drum. The clutch and brake mechanism are interlocked, and are quickly and easily controlled by one lever.

The Parkersburg Portable Bailing Machine occupies very little space on the derrick floor and is anchored to the floor sills by rods and plates supplied with the machine. Driven from the drawworks countershaft—either from the fast side sprocket, or from a split sprocket placed along side of the engine sprocket. The exceptional fast bailing, together with the time saved rigging up, assures a decided saving.

Parkersburg Bailing Machines and Chain Driven Sand Reels are made in a variety of sizes and types for use with Rotary Rigs and Standard Cable-tool Drilling Rigs.

Ask our nearest representative for information regarding sizes, capacities, and information as to just how these machines will save money for you. We'll be glad to tell you where there is a Parkersburg Bailing Machine or Chain Driven Sand Reel in a rig—convenient for your inspection.

The PARKERSBURG RIG & REEL COMPANY

Main Office and Works, Parkersburg, W. Va. ***New York Office,*** 30 Church St.

California Representatives, BUCK & STODDARD
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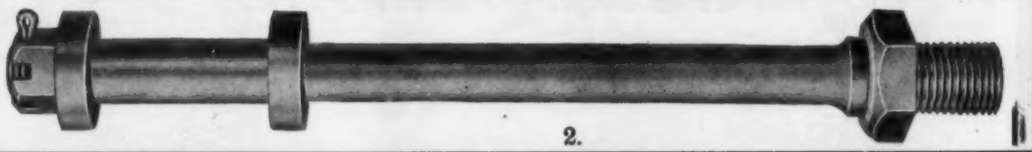
ALCO—Tools that "Speed-Up" and Make Better Work Easier

1



2.

1. Alco Flexible Swab: Maintains an even pressure on all four rubbers, preventing any leakage of fluid. Special slots permit fluid to pass into internal chamber and act as pressure on rubber. The Swab will swivel at joints without danger of unscrewing, and can be run harder and faster than any other type. "It Gives In The Well".
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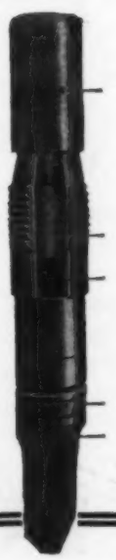
3. Alco Releasing Bulldog Spear: Embracing a special releasing attachment which makes it unnecessary to jar loose in case tubing cannot be pulled. The spear acts as a guide for the tool when going in. Positive in operation.
4. Alco Sucker Rod Coupling: Prevents rods from wearing out the tubing. The balls set all around coupling turn when coming in contact with tubing, eliminating friction and wear. Balls will not wear loose or drop out.
5. Alco Core Barrel: The simplest core barrel built. Extra strong, and fast in operation. Will take a core as fast as fish tail bits will cut, and still keep hole to proper size. Special core catcher rotates freely in barrel and eliminates danger of burning up the core, or necessity of burning in core. Core slips out without tearing or breaking. Distributed exclusively in California by Elliott Core Drilling Co.
6. Perfection Drill Pipe Float Valve: Relieves excessive strain on derrick, draw work, hoist mechanism, and wire lines, when running long strings. Also serves to semi-float pipe down the hole. Placed at point in string where it will give required relief. Simple and efficient. Low in cost. Made with Rotary tool joint connections.



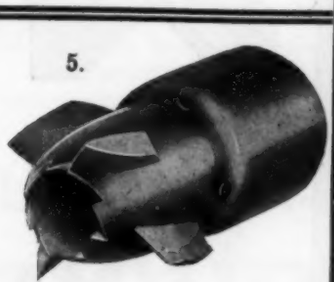
3.

Allen & Courtney Oil Tool Co.

Cor. South Park and Main Sts., Box 1188, Telephone Gardena 723.

Compton, California

4.



5.

6.

If It's an Alco Tool It's Modern

The Standard Collapsible Rotary Drill

And

Core Barrel used with it are eminently efficient and reliable.

The Core Barrel is attached to bottom of the drill and descends inside the drill stem.

Only a few minutes are required to obtain a core.

At a well 10 miles southeast of Hempstead and about the same distance southwest of Hockley, in Waller County, Texas, Mr. G. N. Gordon took more than 100 perfect cores during the past month with this tool, without a single failure. Patent applied for.

Manufactured by

O. M. CARTER

W. T. HILTPOLD, SALES AGENT
206-7-8 SCANLAN BLDG.
HOUSTON, TEXAS

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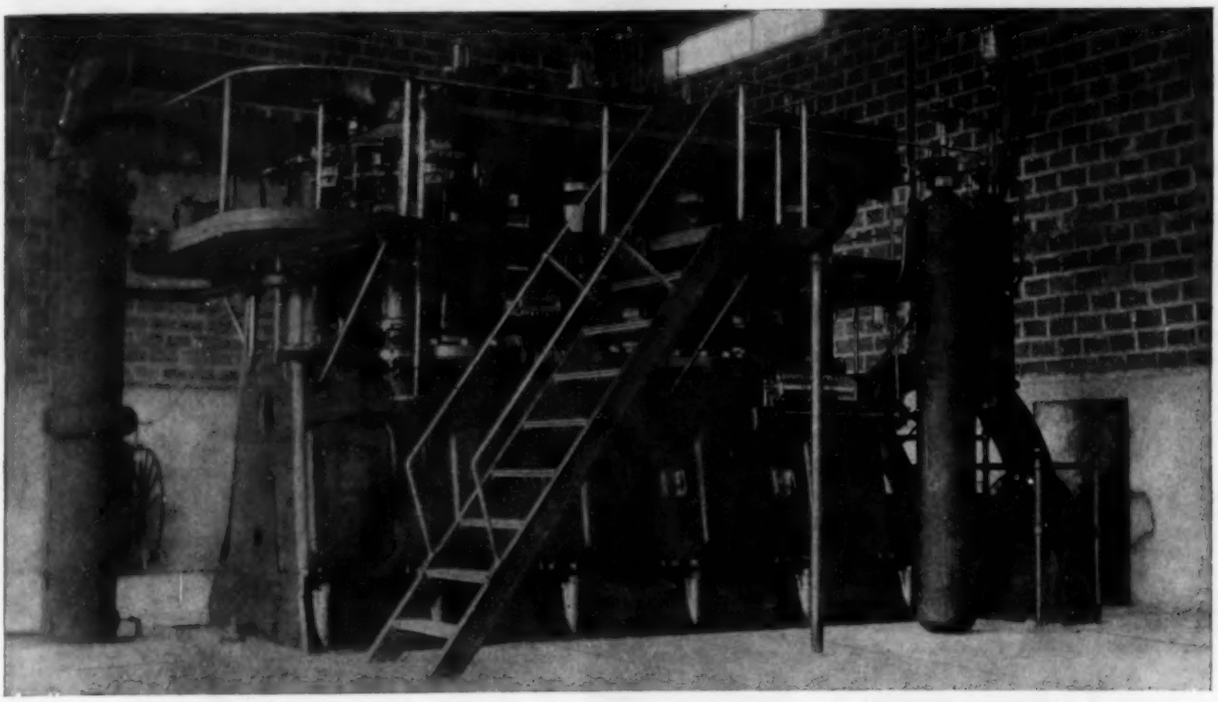

400-B. H. P. McIntosh & Seymour Diesel Engine driving high-pressure pumps. Engine and pumps separated by a fire wall. A type of unit which has achieved just popularity in pipe-line pumping stations because it has no equal for year-in year-out satisfactory service

The right drive for high-pressure pumps
A complete power plant that is simplicity itself!

WHAT you see above it the whole power end, complete and self-contained. There are no boilers, stokers, coal and ash conveyors, storage bins, feed heaters, superheaters, economizers, draft fans, condensers, vacuum or circulating pumps and steam mains—no dirt in the air and no mess on the floor—and labor is easy to get because the hard work is eliminated.

A Diesel engine is simpler to operate, uses only a sixth to a third as much fuel, goes into small spaces and buildings, will run for months without shutdown, never falls off in efficiency or economy, reaches full capacity within two minutes from starting and will remain idle for short or long periods without standby loss or deterioration.

Together with the above points of superiority, the inherent reliability of a McIntosh & Seymour unit due to ruggedness of construction and proven excellence of design, leaves nothing to be desired.

Our Engineers are prepared to submit attractive operating and cost data, together with proofs and every reasonable guarantee.

At least ask for literature.

McIntosh & Seymour Corporation

Main Offices and Works: Auburn, New York

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412 Bisbee Bldg.

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815 Sheldon Bldg.

McINTOSH & SEYMOUR DIESEL ENGINES

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Humble in the old days

The OIL WEEKLY

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Smackover Crude Is in Good Demand

Reputed of small value because of low gasoline content, output of bonanza field must be considered in that market

By Grady Triplett
Staff Representative

El Dorado, Ark.—Smackover crude! Nobody wants it.

Yet it is in keen demand and drawing a premium.

It's not a gasoline oil.

Still dozens of refiners are taking gasoline from it.

Such are the impressions and the facts concerning the most prolific oil field ever developed.

When the big wells began flowing from the Marlbrook sand men of the industry consoled themselves with the thought that a heavy oil was not objectionable, believing a light oil source would prove a detriment to the oil price structure.

Even now, the impression is prevalent that Smackover heavy crude is of little consequence, so far as the whole crude oil industry is concerned.

But the facts are that this oil has found outlet into domestic circles. That accounts for the fact that its price rose rapidly from 40 cents a barrel to 80 cents a barrel. Spot oil is bringing a 10-cent premium in some instances.

Smackover a Factor

Smackover heavy crude is a factor in the oil situation today. Otherwise it would not be in demand. The reason it has not proved a deteriment to the market is that industry in the United States and abroad was ready to absorb an oil of its type.

A survey of conditions in the field shows Smackover heavy crude to be moving into the following channels:

Fuel oil direct from the wells for domestic consumption.

Fuel and bunker oil, after being topped at refineries convenient to the field.

Gasoline and fuel oil, after being cracked at Arkansas, Louisiana and coastal refining centers.

While the use of Smackover crude as a domestic fuel oil may be smaller in volume than either of the other classes, this use had more to do with the stimulation of the market than any other factor. Shortly after Smackover deep sand crude went into six figures daily, the posted price dropped to 40 cents.

Why Prices Rose

Then it rose quickly, 10 cents at a jump, until it reached 80 cents a barrel. In some instances it is drawing a 10-cent premium over this figure. The reason for these prices is that Smackover crude can be taken from the wells direct to an industrial plant and burned.

With the price at 40 cents a barrel, buyers came in from the industrial centers of the Southeast and some from the Middle West. They began buying in small quantities. Ice plants, cotton gins, power plants and the like turned to Smackover crude oil as a fuel. Soon brokers took a hand in the condition and sought oil.

Those who watched the turn of the price structure say it was not the amount of oil that was bought that caused the price increases. But a few scores of buyers after small quantities of oil gave the market a tone far better than if one buyer had been seeking twice as much oil as were all the buyers of smaller quantities.

Some of the railroads put buyers in the field, seeking contracts over long periods, 40 cents a barrel being the basis on which they proposed to deal.

Under such a condition the price rose. Behind it all, of course, was the fact that Smackover crude was valuable as a fuel oil, even without being put through stills of any sort.

But the chief outlet for Smackover heavy crude oil is as bunker and fuel oil after it has been put through the skimming process. El Dorado, Shreveport, Baton Rouge, New Orleans, Port Arthur and Houston are drawing heavily on Smackover crude through both pipe lines and tank cars.

When put through a skimming process, the oil yields from 8 to 12 per cent of gasoline by straight distillation. This leaves a fuel oil that will meet bunker C specifications. So this oil is replacing that from the lower Mexican fields as a source for bunker oil.

Moving by Tank Cars

In May tank car shipments of Smackover crude passed 700 daily. Records of the railroad companies show that 90 per cent of all crude oil shipments were to the south, the cities mentioned above drawing the oil. A rate of 14 cents a hundred to all coastal refining centers makes rail shipment attractive.

A barrel of Smackover heavy crude can be delivered at any coastal refining center or deep sea loading point for around 42 cents. Unless handling charges are too high the oil can be bought and delivered for close to $1.25 a barrel at these points.

As the oil will give up a small gasoline yield and leaves a good bunker or fuel oil, the refiners at coastal points are drawing heavily on current production and using Smackover heavy crude on contracts that were made with Mexican crude as the intended source of supply.

Tank car shipments out of the El Dorado district for the past three months are shown in the following table:

Month—	No. of cars	Daily Average
March	11,555	373
April	12,525	417
May (26 days)	16,443	709
Totals	40,523	454

Tank car shipments in May moved 150,000 barrels of Smackover oil daily. That this will increase is indicated by the building of additional loading rack facilities and the laying of additional gathering lines in the field.

Present pipe line construction in the field follows:

American Petroleum Company, 6-inch, from section 6-15-15 to section 10-16-15.

Magnolia Petroleum Company, 4-inch, from section 16-16-15 to section 19-16-15; 6-inch from section 8-16-15 to section 3-17-13.

Natural Gas and Petroleum Company, 4-inch, from section 31-15-15 to section 34-15-15; 4-inch, from section 8-16-15 to section 5-16-15.

Rammage et al, 4-inch from section 10-16-15 to section 13-15-16.

Root Refineries, 6-inch, from section 16-16-15 to section 10-16-15; 6-inch, from section 11-17-15 to section 9-16-15.

Southern Pipe Line Company, 10-inch, from section 7-16-15 to section 5-16-15; 6-inch, from section 4-16-15 to section 34-15-15; 8-inch, from section 24-15-16 to section 23-15-16.

Shreveport-El Dorado Pipe Line Company, 6-inch, from Federal lease to section 30-15-16.

Sun Oil Company, 4-inch, from section 5-16-15 to section 9-16-15.

United Central Oil Corporation, 6-inch, from section 2-16-15 to tank farm at El Dorado.

While the greater number of these new gathering systems will connect production properties with field storage, they will in turn afford opportunity for increasing tank car shipments, as most of these concerns are dependent on rail outlet from Smackover.

During June it is not improbable that tank car shipments will reach 1000 daily. If so, fully 900 cars will be routed south from El Dorado and the bulk of these will be billed to the several refining centers with seaboard facilities.

Pipe Line Building

The only addition being made to trunk pipe line facilities is that of the

Standard Oil Company of Louisiana, which is laying a line from the field to the Mississippi River at Lake Village, Ark. With this line complete, Smackover crude will be pumped to a terminal on the bank of the river, where it will be loaded into barges and towed to Baton Rouge, New Orleans or any other point where it may be desirable to unload.

Present trunk pipe lines and their termini serving the Smackover field are:

Atlantic Oil Producing Company, Minden, La.

Gulf Refining Company, Port Arthur.

Louisiana Oil Refining Corporation, Shreveport.

Shreveport-El Dorado Pipe Line Company, Shreveport.

Standard Oil Company (Louisiana), Baton Rouge.

Texas Pipe Line Company, Port Arthur.

Much of the Smackover production is delivered through local gathering systems and short trunk lines to loading racks and refineries in the El Dorado district. The more active transporters in this class and their destination points are:

Amerada Petroleum Corporation, loading rack.

American Petroleum Company, loading rack.

H. H. Cross & Co., refinery in field.

Kettle Creek Refining Company, refinery at El Dorado.

Lion Oil Refining Company, refinery at El Dorado.

Houston Oil Company, refinery at Camden .

Magnolia Petroleum Company, loading rack.

McMillan, Fehlman & Oliver, brokers.

Root Refineries, refinery at El Dorado.

Roxana Pertoleum Corporation, loading rack.

Sun Oil Company, loading rack.

Southern Pipe Line Company, loading rack.

United Central Oil Corporation, loading rack.

Winship et al, loading rack.

Not enough Smackover heavy crude is now going into gasoline to make it a factor in the motor fuel market. But the crude holds enough light fractions to make it a factor in the gasoline market. And its use for gasoline making is growing daily.

Yields of from 17 to 34 percent gasoline have been taken from Smackover heavy crude oil. To get such outputs, cracking is necessary and the yield depends on the type of cracking plant through which the crude is run. When the larger yields are taken, the product left is not a merchantable fuel oil. With lower gasoline yield, however, a good fuel oil product can be left.

Smackover heavy crude is being run through cracking plants at El Dorado and Shreveport. It is moving to Baton Rouge, New Orleans and Port Arthur, where cracking facilities are available. No information is available as to the amount of Smackover crude oil being cracked, but it is growing in favor as a source of gasoline.

Refiners at El Dorado do not hesitate to admit they are using Smackover oil for cracking.

Yield From Cracking

The Lion Oil Refining Company is charging its Burton tube stills with Smackover heavy crude only. This plant turned out more than 3,500,000 gallons of gasoline in May. One barrel of crude gives the following products in this plant:

Gasoline	11.75 gallons
Gas oil	2.36 gallons
Fuel oil	24 gallons

In a test run at the plant of the Ouachita Valley Refining Company, which has Dubbs cracking units, a yield of 34 per cent gasoline was taken from Smackover heavy crude. The remaining product was not a merchantable fuel oil. This company made the run only as an experiment. But it shows the possibilities of this crude as a source of gasoline.

While the crude gives up gasoline when charged as the only stock, the more common practice is to mix Smackover heavy crude with some light oil and put the mixture through a skimming plant, leaving a residue for the cracking stills. This is the practice being followed in the Shreveport area. Refineries there, however, are bent on keeping the result of these runs to themselves. Yields of 30 per cent of gasoline from a mixture of half Smackover heavy and half Smackover light are known to have come from some of the Shreveport plants.

Run in Mixture

The Caddo Central Oil and Refining Company, which operates a continuous run skimming plant at Shreveport, is preparing to run a mixture of Smackover heavy with an equal portion of Smackover light crudes. The oil will be mixed in the line and delivered ready for running. Laboratory tests indicate a recover yof 12 to 13 per cent of gasoline from this combination of charging stock.

The Carlton-Ellis tube and tank cracking method is considered excellent for handling Smackover heavy crude. The recovery of gasoline from this type of plant is around 20 per cent, leaving a marketable fuel or road oil. This figure does not come from refinery operation, although this process is in operation at Louisiana plants, where Smackover crude is being run.

No reports are available from plants of the Gulf, Texas and Magnolia plants in the Beaumont-Port Arthur refining center. Smackover heavy crude is being moved into this territory through both pipe lines and tank cars.

Since the practice in most plants is to run Smackover heavy crude in a mixture with some lighter oil, it is impossible to determine the exact return on the oil.

Blending Necessary

The gasoline from Smackover toppings by cracking can be blended with around 50 per cent of straight run gasoline from some lighter oil, to which 15 per cent by volume of natural gasoline can be added to produce a product of proper gravity, initial and 20 to 50 per cent over in order to meet U. S. Motor specifications.

Operating costs on Smackover heavy crude are higher than on lighter oil because of asphaltic, carbon and olefine content. These contribue to the difficulty of treating the product by requiring stronger solutions of sulphur acid. Some refiners have found it necessary to rerun more often when working on Smackover heavy crude for gasoline.

There is danger and added expense in cracking Smackover residue in that the gasoline cut will lose its color quickly through polymerization. The experience of some refiners is that gasoline from this oil can not be stored for as long periods as that from lighter oils.

Kerosene from the crude is a low gravity product, with poor burning oil qualities. It also loses color quickly as does the gasoline. The best grade of kerosene is from 40 to 42 gravity and to make it a good burning oil filtering is necessary. This adds to the refining expense, especially where a plant is not equipped with clay restoring facilities.

Fuel oil remaining from the cracking process is low in gravity, running down to 11 and 12 degrees Baume. Viscosity, however, is within the limits of Bunker C specifications and the operation of a cracking unit can be so regulated that sediment of carbon and asphaltines can be kept below 2 per cent.

These difficulties of operation are the only drawbacks to the use of Smackover heavy crude as a source of gasoline. So the price of gasoline is sure to be the determining factor in the amount of gasoline that is taken from this oil.

Within this broad restriction comes the individual operating problems of refiners. For one thing it seems certain that the crude will be run for its gasoline in the refining plants that have cracking equipment. Then it will be run in plants located advantageously. The El Dorado, Shreveport, Baton Rouge and Port Arthur refining centers will draw the bulk of Smackover heavy oil for gasoline extraction.

With an extremely favorable market, some of this oil may find its way to refining centers along the Atlantic seaboard. This can be accomplished by rail or pipe line transportation to the Gulf of Mexico and then by tanker coastwise to Atlantic refining points.

Teagle Thinks Cautious Progress Best For Industry

Houston, Texas. — Accompanied by other officials of the Standard Oil Company (New Jersey) Walter C. Teagle, president, spent Sunday and Monday of this week in Houston. While here the party were in conference with officials of the Humble Oil and Refining Company. An inspection of the refining and terminal properties at Baytown was included in the visit.

The party came to Houston from Baton Rouge, having previously visited in Oklahoma and Arkansas. The trip will include visits to California and into Canada before it is completed and will require more than 9000 miles of traveling.

Other officials in the party were S. B. Hunt, vice president in charge of production; E. J. Sadler, producing director; Orville Harden, secretary to manufacturing committee; F. B. Bimel, manager natural gasoline department; Anson Phelps, traffic manager; Northrup Clarey, in charge of advertising and publications; and Alfred Little, secretary to the president. The party also included Richardson Pratt, director of the Carter Oil Company, and E. P. Salisbury, assistant to the president of that company.

While in Tulsa Mr. Teagle expressed the opinion that the prospect is good for a prosperous period in the oil industry. He said it would take wise procedure in each branch of the industry to keep the business on the upward trend.

Concerning Smackover, he expressed the opinion that it will cause no break in the market, unless the amount of oil produced there is sufficient to flood the channels for fuel oil.

WALTER C. TEAGLE
President of the Standard Oil Company of New Jersey.

His statement for the press follows:

"If none of us starts rocking the boat the oil industry ought to enjoy a better year than we have had for several years past. We have two controlling factors in production and consumption which are never in balance. It would be too much to expect in the way of good luck to have them ever in exact balance. It is to take care of the gap in between that we have field storage.

High Production

"We face the probability this year of another high record in the country's consumption of petroleum products. So far 1925 has run well ahead of last year. The average increase in gasoline sales for the first quarter of this year was 28 per cent, but the industry should not expect to see this rate maintained now that we are coming into the season of maximum consumption. Only 18 per cent of the year's gasoline is consumed in the first three months. Variations in the weather have much to do with the showing in this period. Two or three weeks of sunshine in the early spring makes a big difference in the percentage gain, especially when as was the case last year a comparatively poor season is used for comparison. For the last five years the gain in the first three months has been badly misleading as an indicator of the year's needs. If from present indications we can look for a percentage gain equal to that made in 1924, the industry should be satisfied. That would mean a big addition when written into our gallonage figures.

"This should spell prosperity if the industry is able to realize the present prices for its products through the balance of this year. The doubt on that score is due to the continuance with us of our old bugaboo of over production. We are still bringing crude out of the ground in too great a volume for its economic use, and this in the face of government statistics showing that we have needlessly large stocks in storage. There is good reason to believe that in spite of the big gain in consumption of products we shall close this year with stocks as large, if not larger, than we had at the end of 1924. Earlier indications that a healthy draft would be made on these excessive stocks were upset by the remarkable increase in the production at Smackover, and by an increase above expectations in California's output.

Gasoline Supply Ample

"There is no ground for uneasiness in any quarter as to the sufficiency of gasoline supplies, even if consumption continues to gain. There is an ample supply in sight.

"These considerations suggest the reservation in predicting a better year for the industry. The amount of oil in tanks should be a warning to make haste slowly. Too much activity in drilling, particularly in developing new fields, and an unnecessary increase in refinery runs, might easily mean materially lower prices, not only to the producing fraternity, but to all other branches of the industry. There will be at some time a demand at remunerative prices for every barrel of crude oil that can be produced. There is no justification for trying to bring to the surface this year all of the oil in sight. The country is amply protected by current production plus the abnormally large stocks in storage, and it seems to me that the wise producer will proceed with caution in drilling where competitive conditions do not make it necessary for his own protection to get the oil out as soon as possible. So too the wise refiner will limit his crude runs so as to produce the quantities of finished products for which there is a ready market."

Joe Pyron, district pipe line foreman for the Gulf Pipe Line Company in the Olney, Texas, district, attended the big Shrine "doings" in Los Angeles, and plans a real good time in California until about July 15.

R. L. Eckerty, formerly zone agent for the Gulf Production Company in the Wichita Falls, Texas, district, is now a citizen of Los Angeles, having identified himself with the Southwestern Engineering Company, manufacturers of natural gasoline plants, mine machinery, oil field boilers, etc. His friends can address him care of the company, Hollingsworth Building, Los Angeles.

Goverment Figures Show April Incresse

Gains were slow, however, in the light oil districts where completions were all small

FIGURES covering crude oil production for April, compiled by the United States Geological Survey, show a total increase over March amounting to 674,000 barrels, or a daily average increase of 87,448 barrels. The daily average for the month exceeded 2,000,000 barrels for the first time since November, 1923, when Powell was producing at its maximum.

During April, the increase was chiefly due to Smackover, Arkansas where the deep sand is being exploited. Of the total increase, 76,391 barrels consisted of heavy oil, heavier than 24 degrees, and 11,057 barrels were light oil.

This wide margin between the increase in light and heavy oil served as a stabilizer to the crude market, holding it to postings made earlier in the year, and even strengthening it sufficiently to bring slight increases in price on eastern states oil. Smackover heavy was also advanced in price until at the close of the month this oil was bringing 80 cents per barrel.

The slow gains in the light oil districts especially Oklahoma and Kansas, in spite of a normal number of completions show the difficulty of maintaining a steady output with small producers. Illinois also showed a considerable drop in output, but held up in field work.

California was responsible for the heaviest drop during the month. With a slump of 22,000 barrels daily, the entire loss was 660,000 barrels. This came from the old fields in the Los Angeles Basin where few new wells are being drilled and old producers are showing declines more or less consistently.

New York and Colorado were the two other states that showed a decreased output. In Colorado four wells were completed but all were dry. New York fields reported five wells, four of which were producers, but initial production was only five barrels.

In the more active districts where increases were shown, drilling was above the average in both proven territory and wildcat areas.

Along with the increased output of home oil, daily average imports from foreign countries fell off 25,145 barrels. Since Mexico is the principal source of foreign oil shipped to America, the bulk of the decrease in imports came from Mexico. There field work was temporarily tied up by labor troubles and those wells that were completed were not above the average in initial production. It is also probable that the surplus of fuel oil in the Smackover field weakened the demand for this same grade of oil from Mexico.

Indicated deliveries of crude to domestic consumers were up 79,067 barrels daily. A check on the refineries in this country showed that practically all of them were operating, and a majority were running at maximum capacity. Gasoline prices were good and the demand for refined products continued strong.

Pipe-line and tank-farm stocks increased 82,000 barrels during the month. The rather consistent increased in most of the big fields of the country were not absorbed by the manufacturing branch of the industry, although the output of refineries during April was undoubtedly above that for March.

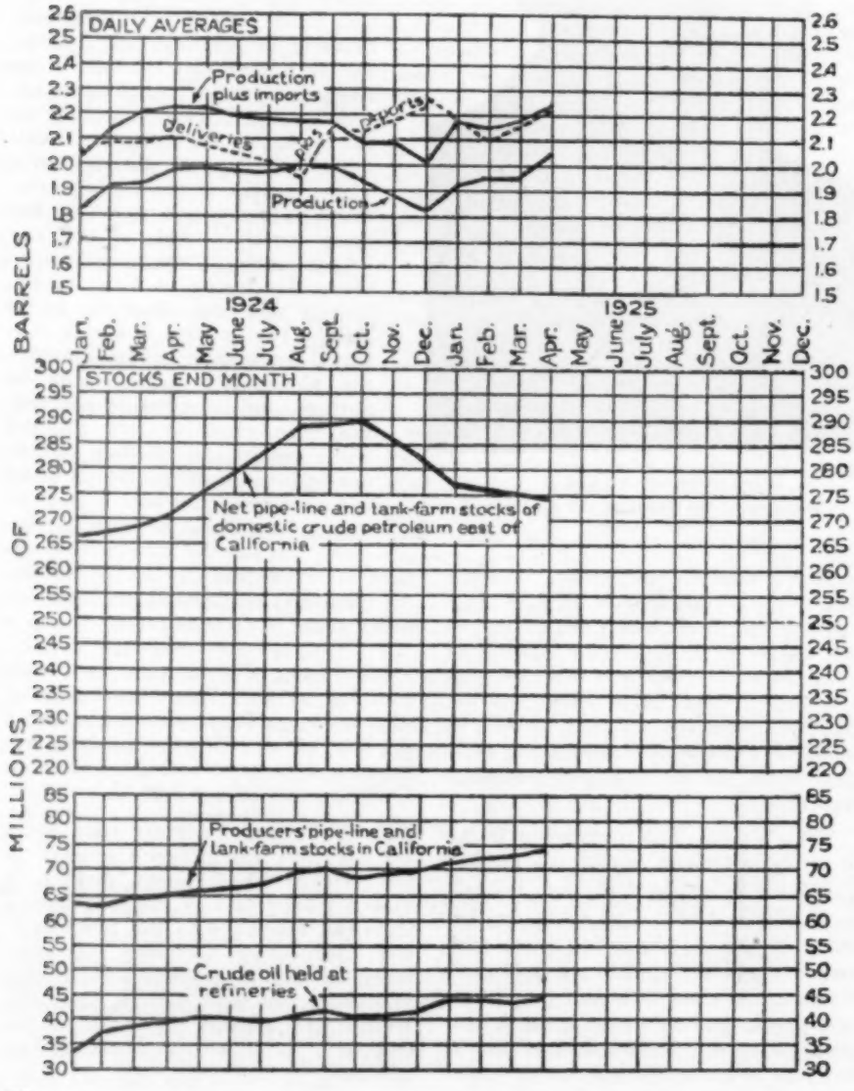
Total stocks of crude oil, including oil held in storage at refineries, amounting to 383,153,000 barrels on April 30, increased 780,000 barrels during the month.

The significance of a stock increase of this size is much less than it would be at a time when the demand for crude oil products would slow up rather than increase such as is the case at this time of the year.

According to the Survey's estimate of the indicated day's supply of pipe-line and tank-farm stocks, based on the average daily rat of deliveries to domestic consumers and export, the supply decreased by five days for April. Compared with April 30, 1924, the supply of crude in storage at the close of April this year, was two days less.

The number of producers completed during April, was 500 more than during March.

Shipments of California oil through the Panama Canal to the eastern ports of the United States, increased nearly one-half million barrels. As compared with the first four months of last year, shipments of crude from California dropped 10,000,000 barrels this year.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BARRELS
1924
1925
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
STOCKS END MONTH
Net pipe-line and tank-farm stocks of domestic crude petroleum east of California
MILLIONS OF
Producers' pipe-line and tank-farm stocks in California
Crude oil held at refineries

Crude Market Continues Strength

Experience makes refiners more conservative with premium offers in their competition for connections

By J. Kent Ridley
Staff Representative

WITH Arkansas' big flush production as the only weaking threat, the oil market continues the strength which has been in evidence for the past few weeks, in keeping with the current demand for gasoline. Smaller refiners in the Mid-Continent are well sold up on their plant capacities and orders placed with them by some of the larger concerns would indicate that these stronger units are to an extent concerned over supplies for their marketing branches.

Strength of the gasoline market is having the customary effect of premiums for spot crude and for contracts, which usually go with rumors of pending price advances. But that there is a conservatism in this respect at this time is evidenced by the removal from the picture of some of the enthusiastic bonus payers who have been forced out of business in former seasons. Bankers who financed these failures are the same who are now furnishing funds for operating refineries, and they are a little more cautious about what their money is to be used for. Premiums, so it appears, are to be more conservative this year, despite the spirited competition for better grades of crude.

The refiners and their banker friends have profited from the experience of too much enthusiasm over a good market. Whether or not this education has extended to the producing branch will be revealed should the talked-of price advances make the customary incentive for extensive drilling campaigns.

The Arkansas production is taking care of itself practically apart from the general situation in the United States. This is discussed by other writers in this issue quite thoroughly, and from their deductions it appears that the Smackover oil is being absorbed into channels previously supplied by Mexican crude, both in this country and abroad.

Occasioned by the advances of last Saturday in Pennsylvania grade crudes there is considerable conjecture as to whether this strength in the price structure will spread to other sections of the country, particularly in the Mid-Continent and Rocky Mountain states. Right at this time there is more reason to believe that a Mid-Continent advance may come sooner than a raise in Rocky Mountain oils, although a general upward movement in all grades throughout the country east of the Rockies would not be improbable.

Eastern Advance

The advance in the Appalachian region is the result of producers of that section holding back their current runs from the market, coupled with the decided improvement that has come over the refined oil situation in the East. Indicative of the loosening up of production now that the price has been advanced is a comparison of conditions the middle of May and now. As of May 12, last, runs from producers to pipe line companies in the Appalachian region were 36,067 barrels with shipments from pipe lines to refineries totaling 59,969 barrels. As of May 21 runs from producers to pipe line companies had increased to 68,686 barrels and shipments from pipe line companies to refineries had dropped to 50,656 barrels. It was this kind of a situation that now is charged with the new prices in effect.

As of June 4, two days before the advances in Pennsylvania crude went into effect, although news of the advance was generally reported in the section, runs from producers to pipe line companies were 67,755 barrels with shipments from pipe line companies to refineries up to a total of 89,596 barrels.

Mid-Continent grades of crude now are on a more favorable price basis with the Eastern grades as a result of the Pennsylvania advances. This, coupled with the fact that high gravity crude is being sought after more and more may bring on a price revision in some of the higher grades in the Mid-Continent. Indicative of the general improvement in the light oil area in that section is the statement of deliveries north and east of the Prairie Pipe Line Company for the thirty-one day period ended May 31, last. Shipments totaled 4,719,835.07 barrels or an increase for each day in May approximately 5,000 barrels over average daily shipments for April. Total shipments for April were 4,415,855 barrels.

Light Oil in Demand

Light oil continues to be in good demand among buyers in the Mid-Continent. The completing of another well in the Osage nation in Oklahoma in section 31-21-12 by Grimes and Gillespie producing 50 gravity crude has revived premiums again and the Pierce Petroleum Corporation is taking this oil at a premium of 50 cents above the Prairie and Sinclair posted prices. The Thomas pool in Kay County also gives promise of a new high gravity producing area for Oklahoma and with development proceeding apace in the old Garber field it is altogether likely that light oil recovery in the Mid-Continent will be on a higher scale with the coming of late summer or early fall. However, this fact will encourage a comparatively steady price structure through the hot summer months on crudes now in demand.

Improvement in the refined oil market is having a very beneficial effect on refining activities throughout the whole country and is a material factor contributing to the present firmness of crude oil the country over. Motor fuel is moving well and the demand from the jobbing trade is holding firm price quotations all down the line. This firmness is contributing to the welfare of the producer as well as the refiner and marketer.

In the Rocky Mountain states there also is talk of a price advance and was so even before the increase in Pennsylvania grades. Light oil is in steady demand among refiners in Wyoming and Montana and Colorado and also in New Mexico and Utah. This is bringing about an extension of field work throughout all these states and pipe line companies also are extending their facilities for gathering the crude. In Montana the Midwest Refining Company is laying a 3-inch line from its wells in the Lake Basin district to the railroad at Coombs and other companies are preparing for the increased activity that already is under way in that section.

A study of the field report for the month of May in the Rocky Mountain states will disclose the wide extension of field work. There was a big increase in the number of drilling wells in May over April and a substantial increase in the number of wells completed last month over the previous thirty day period while initial production for May showed a good gain over the initial recovery for April in the section.

Bonuses in North Texas

The loss of crude connections by major pipe line companies in North Texas fields is becoming more frequent as the independent refiners gradually bid up their premium offers. The 25 cent bonus is now available for a contracted period for operators with production conveniently located for crude shipments to the small plant owners, and producers are responding to this extra revenue. Substantial price gains made by all refined products during the past four weeks enables the small plant owners to pay more for their raw material, and the increased premium lessens the resistance to be encountered in tying up additional crude in the face of strong competition from all buying agencies.

Adverse market conditions of previous months and years have served to eliminate the small plant owners that posted record priced premiums on crude at the first opportunity, and the conservative policy of those now in operation forestalls any possibilities of huge crude

bounties being paid this summer. The majority of the independent refiners are comfortably supplied with daily crude runs, and the added premium lately was put on to increase plant operations when behind on shipments of gasoline orders already booked.

The support given the refined market by the domestic and export buyers over the past 30 day period has maintained price strength in the face of a steady upward trend, and the record domestic consumption of gasoline assures the refiners of control of the gasoline market for some weeks ahead. Refiners' quotations on gasoline have been keeping pace with tank wagon advances throughout the country. Prices remained unchanged over the past week on motor fuels. U. S. Motor grade gasoline is somewhat scarce for spot delivery, and prices range from 12¾ to 13 cents. A 100 car order was placed with several Wichita Falls refiners last week by one of the major refining and distributing companies in Texas for shipment to its bulk stations over the state, and delivery could not be made as prompt as requested.

The return of fuel oil to a flat price of $1 per barrel f. o. b. tank cars in North Texas was reported last week, and kerosene and gas oils are likewise stronger in price. The products have been materially strengthened by the more general use of cracking plants, with market prices being very favorable for the cracking of burning oils. This condition automatically throws strength into the natural gasolines for blending, and the latter products are difficult to obtain, with prices ranging up to 15 cents per gallon on the best grades.

The Barney Carter field in Stephens County promises to become one of the major sources of high gravity production in Texas within the next 60 days, with the possible exception of the Big Lake field in the western part of the state. Five flowing wells in the Barney Carter field boosted production across the 13,000 barrel mark for one day last week, and a new completion is expected early this week. The Texas Pipe Line Company has extended a four-inch line into this field to purchase and run oil if connections are available, while in the meantime Prairie and the United Producers Pipe Line (Transcontinental) Company are purchasing all oil produced. The latter company holds contracts with the largest lease owners in the potential producing area to buy all oil produced at premiums ranging from a flat price of 15 cents per barrel to 10 per cent above the posted price.

The Wortham field in East Central Texas is declining steadily, and during the week daily production slumped to 42,150 barrels, with indications that it will fall a few thousand barrels lower, then hold firm, as has been the case with Mexia and other nearby fields.

Although California production is constantly climbing and is expected to continue to climb for another two or three weeks, the market holds stronger than would be expected under ordinary conditions. The new production that is coming in is largely of light gravity with a fair gasoline content.

The gasoline price and demand is setting the pace in California. Natural gasoline is strong, even stronger than the past week, if there is any change. Recent advances in the east are catching the eye of the marketer in California, especially in the Pennsylvania territory. One authority this week stated that the California market situation could be expected to remain strong throughout the summer. At this time it is understood that contracts have been made calling for about 100 tanker loads of gasoline to go through the Panama Canal by the end of the year.

Stocks of gasoline on West Coast at this time total about 11,650,000 barrels, and the contracts just mentioned will take care of 7,000,000 barrels. From now until end of summer, West Coast consumption will be at its highest and stocks can be expected to continue to decline for another three months at least.

California fuel oil is weak. It is not moving very fast and refineries are having to store for future uses.

Crockett County Test May Mean New Field

By H. H. King
Staff Representative

San Angelo, Texas.—The beginning of a new high gravity oil producing area in the vicinity of the Big Lake field in West Texas is almost assured by the performance of the World Company's L. P. Powell 1 early this week in spraying oil at a total depth of 2647 feet after casing off heavy flow of sulphur water from above. This wildcat is located about 15 miles south and slightly east of the Big Lake field, and near the center of section 2, block BB, in north central part of Crockett County. Of the 33 wildcats drilled below the regular Big Lake field oil horizon in Reagan, Crockett, Pecos, Upton and Irion Counties since the discovery of oil at Big Lake in May, 1923, this test is the first to show encouragement of making a commercial producer, and nearby leases are being sought by many of the leading Mid-Continent operators. Humble, Gulf and Roxana made purchases late last week at $100 per acre cash for leases to the southwest and east of the Powell test.

The Powell test was drilled by a promotion enterprise at Fort Worth with funds subscribed by thousands of readers of a promotion oil paper, and an interest in the drilling block and well was given with a year's subscription to the paper. The location was made in January, 1924, but drilling did not get underway until spring. The top of the salt bed was logged at 1173 feet, with a surface elevation of 2807 feet. The top of the big lime, which is generally used as one of the "key" formations in the Big Lake field, was reported to have been encountered at 2590 feet. A long fishing job was only recently completed when Mike Healy was placed in charge of the test, and the oil producing formation was drilled into at 2625-28 feet (pipe measurements) while carrying a heavy column of sulphur water from above. The hole has since been measured up with steel line for a total depth of 2647 feet. A string of 6⅝-inch casing with 12 feet of perforated joint on bottom was lowered with packer late last week, and succeeded in shutting off most of the water.

The production of the well will probably be given a test this week, and indications point favorably for some sort of an oil well. The performance to date has attracted many scouts and lease buyers, and close in acreage is being withheld from the market pending the outcome of the well, while a number of nearby sections of land have been cut up into small leases and sold to individuals in sizes ranging from 2½ to 10 acres. These strips are now commanding a much higher price than paid some months ago. The California Company holds 12 sections of University permits a short distance to the north of the Powell land, and Sinclair is also holding close in protection. C. W. Webster is one of the largest individual lease owners, having a full section offsetting the site of the well to the south, and a number of scattered tracts on all sides.

Arkansas Production Sold

Findlay, Ohio.—Official confirmation has been given here by the Ohio Oil Company of its purchase of the Forest Oil Company's properties in the Smackover and Louann fields of Arkansas. The reported consideration was $1,200,000 in cash and a further payment of $1,250,000 out of future production.

Forest Oil Company has 38 producing wells with an aggregate net production daily of about 2200 barrels.

Oklahoma Gas Outlet

Topeka, Kan.—The Kansas state charter board has issued a certificate of convenience and necessity to the Larutan Fuel Company for the laying of a gas pipe line from Northern Oklahoma fields to Wichita, Hutchinson and other points in Kansas. The granting of this certificate was opposed by the Doherty interests.

Analysis of "Wastes" in the Oil Industry

Denying the indictment, F. Julius Fohs makes suggestions to board of possibilities of more efficient conservation

STILL further refutation of the predication of the Federal Oil Conservation Board that the oil industry is wasteful in methods and practice, is contained in the answer submitted by F. Julius Fohs, widely known consulting geologist. Mr. Fohs is probably best known through the discovery of the large flush fields in the fault region in East Central Texas.

In his letter transmitting his reply, addressed to Chairman Hubert Work, Mr. Fohs says:

"Dear Sir: Answering your questionnaire of January 10th, I take pleasure in transmitting the statement herewith, based upon such facts as are available to me and expressing my personal opinions thereon. I have taken the liberty of combining my answers to questions 1 and 6, and of not answering Question 5, which I feel others are better qualified to answer.

"You predicate your questionnaire on what amounts to an indictment of the oil industry, in which you charge great waste, in the sense of squandering the resources, which even we, who are appreciative of its faults and most anxious for its advancement, stands ready to protest, since it is unwarranted by the facts and economic conditions under which the industry must now operate. I, therefore, take the liberty of presenting an introductoin in which an analysis of waste and inefficiency in the industry is frankly outlined. In this, and in the answers following, the discussion of the so-called 'waste' in our oil resources distinguishes between (1) failure to recover a larger percentage, due to natural and economic causes, (2) willful waste and (3) rapid exhaustion of bonanza reserves instead of conservation for future generations.

"When considered in this light, it is readily seen that willful waste of the resources by legitimate operating companies is relatively negligible and daily becomnig more so. The ethical question, of whether reserves of bonanza type shall be conserved for future generations, is debatable.

"I must emphasize that many of the questions asked are impossible of final answer except after further study and research by experts in the industry.

"I have welcomed your investigation because, despite the fact that I feel strongly that the indictment on which it is predicated is not warranted, the investigation should result in much benefit to both the industry and the government which, through its ownership of reserves and those of its wards, has become an important factor in the industry. It will benefit both because each will have an opportunity to think constructively in a common cause. Besides, it should help the public to a better understanding of the industry. It will also help bring to light existing inefficiencies and may result in greater cooperation of units in the industry where the same does not affect legitimate and healthful competition. It may also bring about a modification of certain existing laws without, however, involving any basic law changes."

The answer to the questionnaire follows:

Analysis of "Wastes" in the Oil Industry

Waste in the oil industry is no longer comparable to that of twelve years ago, when the U. S. Geological Survey and the U. S. Bureau of Mines first stressed it. Oil executives are giving much thought to it because of its close relation to profits, especially since costs of operation are daily mounting while prices remain low.

Any assumption of "waste" must be preceded by an analysis of the possible "wastes" in the industry grouped under the following headings: 1. Financial; 2. Production; 3. Transportation; 4 Storage; 5. Refining; 6. Marketing; and 7. Utilization.

Of these, financial wastes are the most important at this time. A reduction of wastes under the other headings can be effected only to a minor degree under the present cost and price structure; allowing for other proper economic factors. Legitimate companies are making every possible effort to eliminate these minor wastes and are only too happy to be shown effective means of accomplishing this.

To increase the percentage of oil recovery of the total original oil content of a pool much above present results means an increase in cost of operation which the present low price of crude will not warrant. To increase the output of products from the refineries means their replacements by refineries built along newer lines which would require new capital investments which would not be warranted by the income received from the larger output. To reduce the use of a product such as gasoline would require the scrapping of heavy automobiles, of their unduly large engines, and of poor carburetors, as well as reducing the size, comfort and luxury, which reduction would hardly satisfy the public even if the motor industry were ready to scrap present designs or the public able to stand the replacement cost. None of these replacements is warranted so long as bonanza oil, either domestic or foreign, is available at its present low prices.

Financial Wastes—Sub set black faic ..

Financial Wastes

wastes, or misappropriated capital expenditures, affecting the oil industry, are those outlined below. This is not intended as a general indictment but to help throw light on weak spots which may exist in any oil companies. It should be emphasized that many of the criticisms here made are equally applicable to other industries:

A. Undue cost of money or capital.

B. Undue promotion practices.

C. Excessive bonuses for leases.

D. Excess storage; anything aggregating above one-third year's supply for the nation.

E. Too small operating units involving excessive overhead.

F. Too large operating units involving an attenuated management.

G. Carrying an undue amount of "protection acreage," involving excessive annual outlay for rentals.

H. Over-built condition.
   (1) Excessive number of wells drilled.
   (2) Excessive storage and field tanks.
   (3) Excessive number of small refineries.
   (4) Excessive purchase of supplies.

I. Graft:
   (1) In promotions.
   (2) In purchase of supplies.
   (3) On contracts.
   (4) In lease and property purchases.

J. Undue middlemen profits:
   (1) In sale of crude.
   (2) In sale of products.

K. Incompetency:
   (1) Lack of good executives.
   (2) Lack of coordination of departments.
   (3) Nepotism.

L. Haphazard, sentimental and gambling viewpoint in operations still dominant instead of reasoned plans. The importance of eliminating the haphazard operator who is a great detriment to the industry is especially felt in his purchase and development of areas ranging from a city lot to a few acres—detrimental in:
   (1) Attracting capital to unprofitable enterprises that could be used legitimately in the industry.
   (2) Placing a unit of value on such small areas that is quite out of proportion to the return possible from them and thereby fixing values for larger units that are economically prohibitive.
   (3) That the haphazard operator has not the operating force necessary to control his production and water troubles while his greed not only endangers his own production but that of the legitimate operator offsetting him.
   (4) Forcing the drilling of a greater number of wells than is warranted to produce the oil.

Q. 1 and 6—Production Wastes

Types, Causes, Extent and Remedies

It is necessary to distinguish three types of production wastes:

1. Waste defined as a low percentage of oil recovery compared with original oil content of the sand:

A. Unavoidable under present conditions; research necessary;

a. Difficult yielding of oil on the part of certain sand bodies in which shape of pore interspaces, due to character of grains and type of cement, low porosity, low permeability, high viscosity of the oil, low rock pressure and low hydrostatic pressure, play an important part. Further research studies of the Melcher porosity type, collection and study of sand cores

and a study of sand permeabilities are necessary to determine the extent of present yields.

b. To the topping of bonanza or gusher oil deposits, due to the low price received for the crude, more efficient methods can only be employed at the expense of excessive costs compared with present prices.

c. Crude methods of lifting despite the fact that much time, expense and thought have been given to perfecting pumping methods and lifting by means of vacuum, compressed air and extraneous gas.

B. Avoidable:

a. Paraffining or asphalting of a sand: Now being overcome by swabbing, steaming, squibbing and use of heated crude.

b. Artificial mudding of sand: (1) Initial mudding due to rotary and failure to wash sand or to failure to thoroughly clean out muck after standard tools. (2) Secondary mudding due to caving of shale and forming of emulsion with water or oil or both which coats the sand.

C. Inexcusable: Enforceable penalties for infractions desirable.

a. *Water-logging of sands*:

(1) Due to permitting open flow without holding back pressures causing a coning of the water table at the bottom of the well and the walling off of the oil by means of the water cone. This results from unrestricted open flow in gusher wells, from the use of vacuum, use of a too long pumping stroke, pounding of pump after fluid head is off and, last but not least, swabbing of a well to increase production. Swabbing should be restricted entirely to the bringing in of wells simply to clean out the mud and muck and get the fluid started and then only where the danger from water-coning is slight.

(2) Due to drilling wells too deep in an effort to get flush production greater than that of one's neighbor. This is avoidable in most instances for under present methods the water table can be established readily by geologist and production engineer early in the history of each new pool. Where it cannot be determined by them from edge wells, coring is advised. If water is obtained in core, the bottom can be cemented before the well is brought in. Where wells are inadvertently drilled too deep, immediate cementing should be insisted upon.

(3) Due to lack of control in drilling-in wells so as to avoid top water. This involves careful sub-surface geologic studies of sample cutting, bit samples and cores as well as proper determination of casing points.

(4) Due to transgression of edge waters. This may result from failure to immediately cement edge waters when encountered; in some instances this is less important than top and bottom waters.

(5) Due to failure to control so as to produce oil from each sand without flooding with water from others.

(6) Due to lack of insistence on use of proper formulas for cementing and mudding to conserve sands and plug off bottom water.

(7) Avoidance of unnecessary offsets. The present principle of offset wells to care for individual ownerships requires revision where such offsets are on the opposite side of a fault from production, or in proximity to the edge of a pool where only small pumpers are possible, for in both instances it is frequently an economic waste to drill such offsets.

b. *Undue loss of gas contained in the oil*:

In the early stages in an oil pool of the gusher type, where the oil contains gas whose expansion serves as a primary factor in helping flow the oil, an open flow without the holding of back pressure by all wells in the pool is responsible for an early loss of such contained gas with the result that the period during which wells flow naturally is shortened, and the total oil raised by this method materially reduced. Without its use some few wells will give a greater yield for a short period but, in our opinion, a less yield for the life of the well and a less total yield from the pool. Further studies are desirable to determine proper critical temperatures and back pressures and, in fact, it will be necessary to study each new pool to determine the best practice therein.

Aids in Obtaining Better Production Technique:

Better technique in production must be obtained—

a. By cooperation of companies: Co-operation of the developing and producing companies and especially that of their production superintendents and engineers is a prime requisite to overcoming these inexcusable practices. This will necessitate the pooling of all information as to sands and water levels obtainable by the production engineers, scouts and formation men of the several companies and the correct and exact total depths being made known to offsetting neighbors. This data should also be made immediately available by the companies to the Bureau of Mines representative in the district and to the State Oil Commission representative and any infractions immediately reported to each with authority to be given the state representative to enforce the cementing of bottom water and the maintenance of temperatures and pressures to be agreed upon by the company representatives and the Bureau of Mines and state representatives.

b. By employment of engineers to study and direct production on problems in co-operation with the practical superintendent.

c. By education of field staffs in improved methods:

(a) By practical demonstrations such as are given by the Bureau of Mine engineers.

(b) By encouragement of discussion and papers on technical methods by—

1 Government and State Bureaus.

2 Petroleum Division of A. I. M. & M. E.

3 American Petroleum Institute.

c. By encouragement of research in practical problems by the Government and American Petroleum Institute.

2. Waste when defined as loss of crude after it is lifted from the sand, whether lost in higher sands or after it comes to the surface.

Such waste is now relatively negligible but constituted a real and gross waste some ten years ago, before sufficient publicity was given thereto by the U. S. Geological Survey, Bureau of Mines and certain state bureaus, such as the California Mining Bureau and the Illinois Geological Survey. In fact, except in the case of small speculative companies and the unexpected gusher, every effort is now being made to save all the oil produced and charges of gross production wastes can rarely be substantiated.

a. *Bringing in Wells*:

(a) The open flow time for discharging the remainder of water and mud mixed with incoming oil, in the case of rotaries, is now seldom more than fifteen minutes and, in the case of standard tools, about ten minutes. The oil no longer is permitted to flow wild over the derrick except in special or accidental instances as, for example, in the case of a large well at Wortham, where, due to an accident to the hoisting engine, there was an open flow for forty minutes with a loss of about 400 barrels of oil. The present method of flowing to the pit instead of over derrick wastes not exceeding 35 to 50 barrels and only a portion of this is waste as it is later picked up with a pump and treated, making the maximum average loss only 10 to 15 barrels in wells of the Mexia type.

(b) Flow tanks: Some loss is occasioned by overflow from flow tanks either from filling too full or from the force of the inflowing gas-oil stream and some loss also from spraying out through the gas vent or chimney. Both of these are easily remedied.

b. *Fire*:

Occasionally wells catch fire and there is frequently a material loss from the burning wells. Such fires result from (a) smoking while bringing in wells and striking matches; (b) unprocteted light bulbs; (c) failure to cut trees and underbrush in proximity to new gusher wells so that the gas hangs low and increases the fire hazard, and (d) rarely through friction of tools, rope, etc.

c. *Earthen Storage*:

Something unexpected, large wells require the throwing up of earthen storage, and there are losses from oil soaking into the sides and bottom of such tanks.

3. Waste when defined as rapid exhaustion of bonanza reserves and extent to which it is warranted to conserve them for future generations: What is included under this heading is questionably included in the term "waste" for the latter is a relative term. What is "waste" in the present state of knowledge and under present economic conditions can hardly be accounted "waste" (a) in a more advanced state of knowledge, (b) when a product is rarer and costs both more to produce and brings a higher price, or (c) when in competition with unknown inventions and products which the future may offer.

Value of Rapid Development

The rapid development of communities and states has a distinct offset value to too rigid conservation of our oil resources. Without such development, many communities lie dormant and inactive, unemployment is increased and advancement of living standards retarded.

In the opening of new pools, benefits accrue to a large number of people, not only a direct benefit to those of the immediate community but also to many at a distance. This development not only gives temporary employment to a considerable number but means the manufacture and purchase of supplies to a value of millions of dollars, large teaming and trucking bills, railroad freights, passenger traffic, etc., which result in employment at far distant points as well as locally. It means bonuses, rentals and royalties to land owners, which, in states such as Texas and Oklahoma, have tided many farmers over dry years and inadequate returns from cotton crops. In turn, this has meant extension of education for such communities and higher standards of living, also better pavements, better roads and better sanitation. This reflects, in turn, on the children of such communities and prepares them to meet more efficiently the problems the future may offer.

By the rapid development of their oil and gas resources, producing states have effected improvements which would otherwise have required many, many years more for accomplishment.

The undue restriction of development of our resources may result in disuse of refineries, pipelines and producing facilities thereby causing unreplaceable capital losses on the one hand and labor losses, due to further unemployment, on the other, as well as possible excessive increase in the price of oil products. The last may be temporarily offset in part by imports.

Electric super-power development and future inventions, as well as the discovery of suitable synthetic products, may

later replace and reduce oil-product requirements.

Gas Wastes

I shall only roughly touch upon this subject:

A. Gas well wastes:

These are occasioned chiefly in the event gas wells are obtained unexpectedly in drilling a wildcat, when the wells will flow open until a control head can be set in place with proper anchoring.

After the drilling of the first well, it is possible to arrange to either bradenhead the gas or to mud it off. In event of large volumes and pressures, perfect control, by use of iron oxide to weight the mud for a given pressure, is possible so as to drill through with only an occasional bubble of gas.

Fires occasionally cause losses for the same reasons as given previously under "oil production wastes."

There is less gas waste than formerly, due to almost universal use of the mud-laden fluid for mudding off gas strata.

Only two suggestions are to be offered here for drilling through heavy gas strata: (a) Recommendation for all companies using standard tools to have at hand a mud pump in case of emergency in drilling either wildcat or structurally high wells; (b) A more general use of carefully calculated, weighted mud—this mud to be weighed half-hourly.

B. Oil well wastes:

This applies to loss of casinghead gas, so valuable for flowing the oil during the flush period of a pool. Casinghead gas beyond this period is now commonly cared for by casinghead plants in nearly all oil pools.

Over Production

There is no over production of crude petroleum and oil products at present, though there have been recurrent periods of over production in the past ten years.

Measures of Periodic Over Production:

The following factors may be used as a measure of over production:

(a) Excessive oil and oil products in steel storage.

(b) Approach of fuel oil to a coal oil price basis; since fuel oil is a higher quality fuel, it deserves, on its own account, a higher value. Its value should be regulated by the value of the products into which it can be converted.

(c) The price of gasoline below manufacturing cost: This may happen whenever there is too much refining capacity in operation, supplemented by an excess of casinghead and absorption gasoline, even though no over production of crude oil exists.

(d) The price of crude below cost of production from the more than 250,000 small wells—wells averaging three barrels or less. Such small wells constitute the backbone of the industry and, when abandoned, due to the low price of crude, water-flooding of the sand results, together with entire loss of the investment, requiring the drilling of new wells for further recovery. This usually bankrupts small operators and results in an ultimate lower yield of oil.

Underlying Causes of Periodic Over Production:

Such over production has been due:

(a) To recognition and application of geology by the industry in the location of new producing pools where the oil is obtained at depths exceeding 1250 feet. This added new territory and also gusher production, due to increased pressures and better concentration obtained with greater depths.

(b) To improved technique in the drilling of wells and greater speed in completion.

(c) To improved technique in the handling of water problems and the application of mudding and cementing to shut off water and gas.

(d) To excessive imports—as, in previous years, from Mexico, but not now effective. Such excessive imports may come later from South America and possibly also from Mexico.

(e) To improvement in refining methods, especially the installation of the cracking process for producing motor spirits from lower and still lower grades of crude and from the heavier fractions of distillate; and the manufacture of lubricants from asphalt-base or heavy crudes, previously available only from paraffine-base crudes.

(f) To increase in production, partly due to improvements in methods of casinghead and absorption plants for extracting gasoline from natural gas and casinghead gas. This is one of the "wastes" which the industry has largely eliminated.

(g) To peak production from eight major pools and large production from a ninth major pool in a single year—1923—unprecedented and unlikely to recur.

(h) To the opening of Government reserves and reserves owned by Government wards when these should have been preserved for times of stress.

Remedies:

The following remedies are proposed:

(a) Exploration without exploitation, both by Government and operators. (See below.)

(b) I propose certain modifications of existing laws, later in this answer.

Periodic Over Production

The cost of periodic over production falls under four heads: 1. Storage of surplus. 2. Sale of products for a lower grade use. 3. Shut down of wells, and 4. Sale of crude below average cost of production.

1. *Cost of Storing Surplus Supply:*

Here we must consider the cost and carrying charges on tankage and stored oil as well as average surplus supply requirements. In estimating the cost of oil in storage, the following figures will give an approximate basis per 100,000 barrels: Assuming an average cost, per barrel, of $1.50:

100,000 barrels @ $1.50	$150,000
Two (2) 55,000 barrel steel storage tanks, inclusive of land	35,600
Total investment	$185,600
Insurance	$ 1,431
Taxes @ .05	9,280
Evaporation loss, 200 barrels per month plus ⅓ ins. tax int.	3,900
Interest	14,240
Labor and rehandling charge	5,000
	$33,851 or .33851

per barrel per year.

We can assume that there are at least storage facilities for 500,000,000 barrels in this country, or equivalent of 10,000 tanks having a capacity of 55,000 barrels, representing a replacement value of $178,000. (Though, since some of these have been built many years and, in part, at a lower cost, and have been used and re-used, they do not represent this net investment today.) This represents an excess of about 39 per cent of storage tanks above present stored surplus and a greater investment than necessary.

The annual cost of 360,000,000 barrels in storage and 40,000,000 barrels in pipelines and tank bottoms—a total of 400,000,000 barrels—at $0.33851 per barrel, is $135,404,000.

A further refinement can be had by adding the interest charge on the excess steel tankage—about $3,500,000, which adds $0.00875 per barrel. This makes a total of $138,904,000.

If one-third of a year's supply would serve all purposes of safety, then there is an approximate excess expenditure for carrying charges here of $44,400,000 annually.

Average Surplus Supply Requirements:

In other industries, supply products are carried in storage for an average period of a minimum of seven days' supply, in the paper industry, to maximum of 312 days' supply of iron ores. The surplus supply of oil in storage at the end of 1924 was, for a period of 179 days, equal to that for cotton. Surplus of refined oil products equalled fifty days' consumption. I believe one-third year's supply is ample, under present conditions, which would involve a saving of 47 per cent in carrying charges. With reserves definitely outlined, one-fourth of a year's production, above ground, would be ample, for in three months' time any new pool necessary could be drawn upon.

Finding new pools of consequence has heretofore taken from two to four years and, while improvement in methods may cut this somewhat, it cannot even then be materially cut.

2. *Sale of Products for Lower-Grade Use as for Fuel Oil:*

I shall attempt no estimate on this score, as others in the industry are better qualified to give these figures. That it does represent a safety valve to the industry there can be no doubt. More than this, lower manufacturing costs are a distinct offset factor.

3. *Shut-Down of Wells:*

With more than 250,000 small wells producing, it is safe to say that in every period of over production there is a loss of a considerable number of wells at costs varying from $1000 to $25,000—or even more—per well. Since the cost of drilling wells is now much greater than formerly, because of increased labor and supply bills, it behooves the industry to save all old wells possible. Every time there is a shut-down, the water gets the best of the wells and either they are permanently water-logged or else it requires a long period of water-pumping to bring

them back to oil production. No adequate figures are available, either as to cost of resuscitating such wells or the number thereof, and, likewise, the number lost is entirely unknown. There is a further cost to the industry in the water-logging of the oil sand. A study of the number of abandoned wells in years of over production will give a rough measure of this cost.

4. *Sale of Crude Below Average Cost of Production*:

In periods of over production, the average price for crude is, in my opinion, fully fifty cents under average cost of production and, during such periods, money is made only by gusher wells. Other branches of the industry benefit by the lower price, so that only the producing branch is damaged.

Limiting New Pools

To limit the opening of new pools, it is proposed that no restriction be placed on exploration but that exploitation be restricted as set out below, following which methods of exploration without exploitation are discussed fully, since it is recognized that the hazard of finding new pools is too great to await their finding until they are needed:

(1) *The Government:* to withhold its reserves and those of its wards until exploitation is warranted by an emergency:—"emergency" is here defined as —(a) during war, when other reserves are not available, and (b) when imports and domestic production have declined to a point where special preferential use has been set up.

(2) Private Producers:—Restriction, by agreement, of actual production from new pools until required; no restriction to be made on prospecting or exploration provided bringing in of new pools is controlled by an agreement between a majority of operators in the pool.

(3) *Through establishment of a minimum area lease unit by agreement.* (For discussion, see below.)

Exploration Without Exploitation

No sound economic program can be developed for the producing industry without a more adequate knowledge of its reserves, potential and actual. To determine potential reserves, better estimates are necessary, and further on I discuss methods of obtaining such estimates and estimates of reserves in developed structures. But to determine actual reserves in untested structures, there is no adequate method now in use, hence I have proposed "Exploration Without Exploitation." All other industries have their reserves outlined and the petroleum industry must do likewise.

Both Government and private operators are necessarily in the dark as to the actual reserves until explored by drilling as, with best geologic methods, the ratio of producing and dry areas remains one in four. The failure of Teapot Dome to develop into a major pool is an excellent example of the impossibility of estimating undrilled resources.

To overcome this, both Government and private operators should arrange to explore by core-drilling their prospective areas, but not exploit them until and as needed. This will necessitate not drilling in wells but coring the oil sands in a number of wells in each new pool, by means of the ordinary basket core barrel and improved core barrels, as of the Elliott type, for rotary tools, and by diamond drill cores for standard tool holes. In the use of diamond drill outfits, a sufficiently heavy outfit must be provided which is capable of using a fish-tail bit for those portions of the strata requiring no precise record. In order to successfully mud-off sands, a heavier pump than is ordinarily provided with diamond drills must be available to avoid bringing in the well. By cementing or mudding the sands immediately the core is removed, no damage will be done to the pool. The same holes may later be used by drilling out the cement, if larger bit is used than core barrel.

The application of these methods is especially desirable since it is now generally agreed that it is impractical to develop a new pool piece-meal if full advantage is to be obtained from the natural gas and natural-gas expansion in the oil, which constitute the cheapest method now known of flowing oil from wells. It will have the added advantage of not only determining the extent and value of the deposit, but also of serving as a basis for determining the most economic method of development.

Difficulties of Core Estimates

I am not unaware of difficulties of core-hold estimates of production, due to—

(a) Inability to estimate production based on porosity and saturation of recovered core;

(b) Loss in evaporation, partly to be overcome by paraffining the core immediately recovered;

(c) Loss due to contact of drilling fluid;

(d) Irregularity of local sand conditions;

(e) Difficulty of estimating gas content so helpful in gusher production;

(f) Loss in determining saturation by volatization on distilling;

(g) Difficulty of determining precise gravity of contained crude.

Nevertheless, the intelligent placing of three to four such holes would determine the value of a field sufficiently to permit its rapid exploitation, as when needed.

Offsets to Frozen Investments

The investment "frozen" or tied up in leases that are core-drill-tested would be offset by—

(a) Less necessity of carrying rentals on large blocks of checkerboarded leases;

(b) A smaller above-ground steel tankage crude reserve, and hence lower "frozen" investment and carrying charges in such account;

(c) Decreased losses from storage evaporation;

(d) More efficient development, the drilling of less dry holes and avoiding the drilling of more wells than necessary;

(e) Advance provision for storage, pipelines and supplies, only in accord with needs of pool, instead of much in excess as in the recent Wortham development.

Most of all, it would be a great stabilizing factor in the economics of the industry and would avoid the large speculation and losses in shares purchased on the assumption of large reserves of certain oil companies which, upon drilling, are frequently found not to exist.

It may be asked how such methods may be employed where ownership of a locality is divided. Either by co-operation of the owners or else any owner of material holdings may do so on his own account in the hope of adding thereto by purchase.

Operations for Government

These could be undertaken by private corporations, provided—

1. Lease units were sufficiently large.
2. That bonuses under such conditions would be eliminated;
3. That royalties would be scaled down comparable to those obtainable from non-governmental sources.

These considerations would offset the investment of capital over the long period which the government might require that no exploitation be undertaken.

Extent of Oil Reserves and Substitutes

To determine the extent of the United States oil reserves requires:

1. A more adequate estimate of the nation's oil reserves than is now available.

(1) Such an estimate of oil reserves should be made jointly by the Government, State Geological Surveys and representatives of the operators, the estimate to cover the following line of reserves:

(A) Undeveloped oil pools:
  a. In possible oil territory,
  b. In probable oil territory.

(B) Developed oil pools:
  a. Undeveloped deeper sands:
  b. Primary recovery—"topped"* in all sands, by usual methods;
  c. Secondary recovery from "topped" sands;
    (a) Recovery by special methods;
    (b) Redrilling.
  d. Tertiary recovery:
    (a) Either by water-flooding, or—
    (b) By mining, etc.,—as in the Ranney process.

Accompanying this should be an estimate of the cost of production of each type. These, at best, will be crude estimates, to be followed by those based on exploration without immediate exploitation.

Estimates made by representatives of either of these groups alone fail to inspire the confidence of the others and, therefore, are inadequate as a worknig basis.

(2) A similar estimate should be prepared of the oil recoverable synthetically from available oil shales.

(3) Careful study of possible effect of imports from Mexico, South America and elsewhere. This requires co-ordinated estimates of possible yields of these countries as a basis.

Whether primary, secondary of tertiary recovery is attempted will depend on the profit or difference between cost of recovery (affected by improper or cheaper processes of recovery, overhead, etc.) and market price at the time; and what is left in the ground following each of these steps will be waste only in proportion to what the needs and supply are at that time. In other words, primary, secondary and tertiary recovery can only

*"Topped"—defined as skimming off flush oil; that is, that which is most easily and cheaply recovered.

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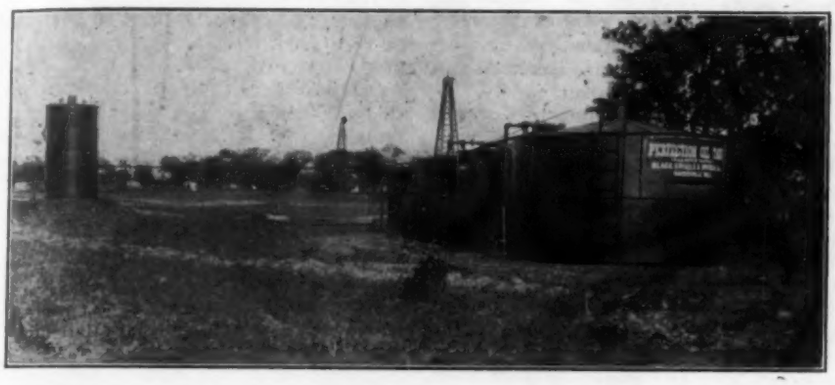

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be undertaken when profits are respectively great enough above costs to permit these respective steps.

Minable Oil Sands:

1. In developed pools;
2. In or near outcrops.

Preferential Use:

There is no reason as yet to consider preferential use. When this comes, certain products can, at a somewhat increased cost, be obtained by further rerunning of low-grade distillates.

Substitutes for Crude Oil:

1. Shale oil.
2. Coal distillates.
3. Vegetable or organic distillates and compounds.

There is no reason to believe that any material amount of substitutes will be required for fifty years or more, after which shale-oil will be in demand. Foreign oil will be imported for a considerable period before shale oil is used. The cost of production increases in the order in which the substitutes are named above.

Changes in Technical Methods and Modifications of Laws to Improve the Industry

I would stress—1. Changes in technical methods, to be brought about gradually through education as an important factor in increasing output and eliminating waste; hence increasing net earnings. To accomplish this effectively, co-operation of competing companies is necessary. 2. Modification of laws, both federal and state, would prove most helpful without involving any basic law changes. The latter, even if possible, would require too long a period to change from existing laws and for adjudication in the higher courts. The technical changes that are desirable in producing oil have been outlined under Q. 1 and 6 as well as a means discussed for educating the non-technical groups in the industry as to their import and value.

Modification of Existing Laws

1. *Modification of Federal Laws:*

(a) Better co-operation of operators by agreement through modification or repeal of the Sherman Anti-Trust Law. A modification of this law, permitting regulation of evils that may accrue from abuse by monopoly, instead of—as now—restricting co-operative agreements where they make for economic saving, is most desirable, since mere size of corporation or combination of effort is in itself not necessarily contributive to abuse.

(b) Repeal of the statute providing for forced lease sales at stated intervals of Government-controlled reserves. There should be substituted for this an arrangement whereby sales may only be made after the decalration of an emergency by a board, (consisting of say, four cabinet officers, similar to those constituting the present oil commission) after open hearings by them and approval of the dates of sale by the president.

(c) Provision for improved methods of allotment of Government lands and leases:

1. Change in form of bids with a view to eliminating the psychology of auction bidding and substituting bidding based upon reasoned estimates of values involved. This would help eliminate the sporting element in the bids.

2. Allotment of larger areas to single operators.

(d) Provision for withholding Government production until emergency, that is, until either necessary—in case of war, for army and navy—or until private reserves have reached a low ebb.

(e) Provision for the extension of the present service by the Bureau of Mines in educating operators in the problems of water, production and greater recovery. This will require increased appropriations for the Bureau.

(f) Provision for adding to Government reserves any minable oil sands possible and reserving until oil reserves are greatly reduced.

(g) Provision for the restriction of new production by Government wards in times of over production.

2. *Modification of State Laws:*

Use of present police powers of state laws to force either abandonment of townsite drilling or restrictions as to minimum area and proper distance from houses, on the theory of avoidance of fire hazard. It may be necessary to pass special acts to emphasize these powers and give teeth to state oil commissions.

3. *Modification of Lease Forms:*

Revision of offset-well practice: A clause to be inserted in all oil leases, stating that the release of the lease or any part thereof within ninety days after the completion of an offset will avoid any liability to the lessee, and providing that, in event of proximity to a fault line or edge water, offsets may be avoided by written notification to the lessor of the facts, such offset not to be released unless the lessor shall satisfy the lessee that he can arrange for its drilling and providing that, in this instance, the lessee shall have the option of either drilling or releasing such offset without forfeiting any other rights.

Unit Leasing or Value of Minimum Lease Units in Economical Development, in Limiting the Opening of New Pools and in Retarding Production

A minimum area lease (or fee) unit for oil development has been proposed by others, as well as by me, at various times;—a suggestion inspired by:—

1. The spacing of wells too close to one another, especially where the acreage has been split into one to ten-acre plots and even into city lots, causing an undue number of wells to be drilled.

2. The theory that the porduction from new pools may be retarded after they are opened if control lay in a single unit as by means of a monopoly of ownership concentrated in a community lease, or joint ownership either through a syndicate or a special operating company.

3. The hope that it would limit the bringing in of new pools by an operator who has very little acreage in a locality and who yet forces the development by the larger holders.

Our standards vary from time to time as new experiences force upon us a a change of ideas. Where but a short while ago the writer felt that production in a new pool could be restricted once it was opened, if either a minimum areal unit were available or the area were unit-controlled, recent experience shows conclusively that if a field is of gusher type it must be drilled up as fast as possible and the wells must be spaced close enough to take advantage of the gas contained in the oil to help lift it economically. Under these conditions offsets, resulting from different ownership, make less difference in cost than is at first apparent, except, of course, in the case of very small tracts of one to two acres or town lots of still smaller area. Rapid drilling is unnecessary in the case of shallow (non-gusher) production as contained gas is absent and the pool, except for water encroachment, will produce later as well as earlier.

Three factors enter into the problem of minimum areal production units:

1. Spacing of wells;
2. Minimum area that can be profitably operated considering overhead;
3. Minimum area that can be operated advantageously, considering proper spacing of wells, placing of flow tanks and stock tanks, boilers and other equipment to operate the lease efficiently.

1. *Spacing of Wells:*

The minimum area per well, determined by the spacing of wells, is basic in defining a practical and economic minimum areal lease unit. Such a unit is necessarily a multiple of the minimum well area and the principles underlying well-spacing largely govern its size. From this it follows that a single unit will prove impractical and it will be necessary to define a number of standard minimum lease units. These must be based upon: (a) the character, size and shape of the oil pool, (b) the depth, porosity, thickness, gas content, saturation and water limits of the sand and viscosity of the oil with consequent difference in pressures and volume of output, (c) direct or diagonal spacing of wells, dependent on direction of oil flow into the well, and (d) shape of unit.

My idea of the present minimum and range, although I have previously advocated large minimum well areas, is as follows:

Range of Minimum Single Well Areas:

Feet	Acres
0—1500	2 —5
1500—2500	2½—5
2500—4000	2½—7½
4000—5000	5 —10
5000—6700	7½—15

In the case of gusher wells, the minimum well unit can profitably be much smaller than heretofore supposed; in fact, as small as 2¼ acres to the well. In the case of shallow wells, where the pressures are low, it must be small to get all of the oil; in fact, as small as two acres.

The shape of the lease unit will influence the spacing of wells and size of minimum snigle well areas. A rectangular form offers the best possible shape and the investigation should consider whether a rectangle with what minimum ratios of length to width is most practical. In the new mining law, promulgated for the Palestinian mandatory, the minimum ratio is two to three.

Minimum Areal Production or Lease Units:

The ideal minimum areal lease unit for gusher wells, I would put at twenty

(Continued on pape 56.)

HERE'S ROD PULLING ECONOMY

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April, 7th, 1925.

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We are very well pleased with the service these friction outfits are giving us, as thru the use of them we have been able to cut each pulling outfit, for tubing, from three men down to two men, getting the same and ofen more wells pulled, as we formely did with the use of three men. We also find that our investment and the upkeep on the friction outfits is quite a bit less, than any type pulling outfit we have ever used. Another very desireable point of this type outfit is that when the truck is not being used for pulling we can use it for light hauling.

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Say you saw it in The Oil Weekly

Development of the Big Lake Oil Field

West Texas area has large production possibilities which will be developed slowly because of ownership

By Richard A. Jones

DUE chiefly to lack of storage and transportation facilities, and to the fact that the productive acreage was for a long time controlled by two companies only, the Big Lake field has been developed slowly and conservatively. The early wells were small, but as drilling revealed more knowledge of the formations penetrated and taught better how to handle the wells, large wells were brought in—Big Lake No. 11, section 24, block 9, University of Texas lands, was completed with an initial production of 3500 barrels daily. This record has been recently eclipsed, for on April 15th last, Big Lake No. 18, section 25, block 9, University of Texas lands, was completed, flowing by actual gauge 8753 barrels initial production daily, from a depth of 2899 to 2928 feet.

Until recently, except in the older portion of the field, near the discovery well, locations were made one to the quarter section only. About three months ago locations began to be drilled one well to one-sixteenth section. And it is only within the past few weeks that a really active drilling campaign has been initiated by the Big Lake and Texon companies and wells are now being drilled on 500-foot offset locations. The scene of this intense drilling is along the east line of section 1, block 2, which is also the west line of section 36, block 9, and along the south line of section 25, block 9, which is also the north line of section 36, block 9. The Big Lake and Texon acreage meet at these property lines in an area which is near the summit of the structure and possesses consequent large oil production.

Thirty Wells Planned

The Big Lake Oil Company now has 18 tests drilling or preparing to drill in this vicinity (up to Big Lake No. 42); while tentative locations have been made as high as No. 46. The Texon Company has 12 tests drilling or preparing to drill, with other locations in prospect. This makes a total of 30 wells to be completed in the near future.

Three months ago oil men who heard so much talk of the Big Lake field, and of its potentialities as one of the largest fields in Texas, might have questioned with reason, "How can a field with only 12,000 barrels daily production be such a large oil field?"

But, as has been mentioned, for a long period of time wells were drilled one location only to each quarter section; only the past winter were wells spaced as closely as one well to each one-sixteenth section, and it is only in the last few weeks that wells are being drilled on the customary 250-foot location from land lines. The 12,000 barrels daily production of three months ago was being produced from but 15 wells. There are approximately six square miles of proven acreage in the Big Lake field, and 90 days ago it was only necessary to imagine this large proven acreage thickly dotted with derricks as at Powell or Wortham in East Texas to obtain an idea of the justification of calling the Big Lake field one of the largest oil fields in Texas, even when the published figures of production would have seemd to render such a statement unjustified.

Production Possibilities

Today the Big Lake field is coming into its own. It has taken major rank as the third largest oil field in Texas, and its potential ultimate production is enormous, running into millions of barrels of oil. The development, owing to the fact that the field is controlled by two companies only, will be kept well in hand, and there is no chance of a wild boom and of a consequent flood of oil thrown on the market. Nevertheless, the yield of the field is steadily mounting, week after week.

RICHARD A. JONES

author of this article, is a consulting geologist with headquarters in San Antonio. He recently left the geological staff of the Humble Oil & Refining Co. He is a Kansan and was educated at the University of Chicago.

On May 22, 1925, the Big Lake Oil Company was producing 16,605.52 barrels from 16 wells, four pumping and 12 flowing. On May 20, 1925, the Texon Oil and Land Company was producing 12,664.97 barrels from nine wells, one pumper and eight flowing. This makes a total production of 29,270.49 barrels, from 25 wells, or rather from 20 wells, for the contribution of the pumpers to the sum total is negligible.

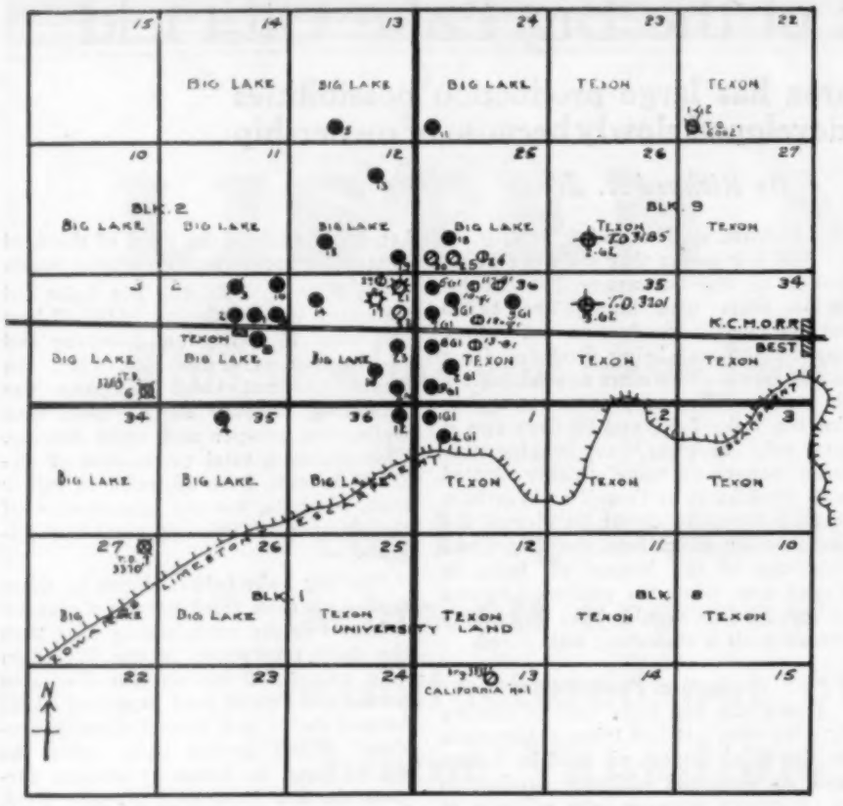
The Big Lake field is shown by these figures to rank third among Texas oil fields. For the week ending May 29th the daily production of the Wortham field was 45,750 barrels; for the same period the Powell field produced 50,520 barrels daily; and Archer County produced 39,860 barrels daily. Only the above areas in Texas at present surpass the Bik Lake field in daily yield, and the Archer County production comes not from one field, but from a number of small, scattered pools. The fields which in amount of production fall into the production statistics just below the Big Lake field are South Liberty, Luling and Hull, producing for the week ending May 29th, respectively, 28,760 barrels, 27,400 barrels and 22,250 barrels daily.

Moreover, within the past few days the Big Lake Oil Company has completed Big Lake No. 19 as a large well, which will throw the daily production of the field well above the 30,000 barrel mark. With the drilling activity now under way it seems very likely that in a short time Big Lake may be producing more oil per day than any field in Texas.

Character of Oil

The oil is high gravity—38.6 to 39.6 degrees. As it comes fresh from underground, when a well is completed, it is a bright, vivid green in color—the "greenest" oil the writer has ever seen. Another interesting fact is that it is cold oil, rendering the flow lines cold to the touch.

A small amount of gas accompanies the oil—from one million to two million cubic feet per well. This gas is sulphur gas, which makes the oil smell strongly of sulphur, and it possesses very dangerous properties. Two men have been killed by the gas since the discovery of the field, and numerous men have been made temporarily unconscious by it. The most important constituent of the gas is hydrogen sulphide (H_2S), a most dangerous gas in concentrated form. Men, chiefly gaug-



BIG LAKE OIL FIELD, REAGAN CO., WEST TEXAS.
SCALE: 1 INCH = 2000 VARAS.

ers, who have been overcome by the gas, say that it has an effect like ether. This sulphur gas is most deadly as it comes fresh from its subterranean sources when wells are completed. In the cold, quiet hours of dawn, about sunrise, the gas hugs the ground around tanks filled with oil from a newly completed well in a gray mist, like certain varieties of the poison gas used overseas in the war, and birds and dogs which have approached the tanks have been asphyxiated and found dead there.

The gas is inflammable, but gives off a disagreeable sulphur odor when burning, that detracts greatly from any value it might have as commercial gas —and owing to its poisonous character it would be dangerous for household use by inexperienced parties. However, it has sufficient gasoline content to render the operation of plants for the recovery of gasoline a profitable undertaking in the field.

Geology

The depth of the main producing horizon in the Big Lake field is approximately 3000 feet, occurring about 100 feet below the top of the lime series, which is known in the field as the "big lime". To the naked eye, bailer cuttings of the "big lime" apear to be a pure, gray limestone, but the microscope reveals some anhydrite (which, chemically, is calcium sulphate, and the equivalent of ordinary gypsum, save that gypsum carries a certain amount of water, while anhydrite has no water content) and a very considerable percentage of dolomite.

The "pay sand" is, in the majority of cases, a sandy oolitic dolomite. Some samples are more sandy than others, as high a percentage of silica as 65 per cent being recorded in some instances. Dolomite is a compound of calcium carbonate and magnesium carbonate, and has more porosity than pure limestone, which is composed of calcium corbonate only. The term "oolitic" is applied to a limestone or dolomite in which the rock is largely in the form of small spheres or globes which under the hand lens resemble very small fish eggs. This oolitic character should make for more than ordinary porosity.

In many cases anhydrite, limestone, and dolomite superficially resemble each other very much, and drillers quite naturally are often unable to distinguish between these rocks and log "lime" only, when really the rock may have been anhydrite or dolomite. The color and hardness of these rocks is often very similar, but they may be distinguished by the following simple acid tests: Anhydrite is not affected by acid and neither foams nor effervesces. Limestone foams and effervesces strongly under cold hydrochloric acid. Dolomite may effervesce under cold hydrochloric acid, but often the acid must be heated in order to get a reaction. Limestone and dolomite also have slightly different crystal form—while the general nature of the crystals is the same, well developed dolomite crystals in many cases show curved faces in contrast to limestone or calcite crystals which display straight faces.

The geologic age of the Big Lake producing horizon is Permian, not Pennsylvanian.

Steady Production

So far the wells of the Big Lake field have shown a steadiness of flow and a sustained quantity of output, that has far exceeded the stability of production ordinarily attributed to limestone, which has usually been thought of as giving a very high initial yield and a very rapid decline; although, as yet, the Big Lake field has not been drilled closely, and close drilling may reveal a more rapid decline than has been experienced.

Big Lake Oil Company No. 11, section 24, block 9, came in almost a year ago for an initial flow of 3500 barrels daily; on May 21, 1925, it was flowing 1090 barrels daily, and in the early part of the year it was consistently making 1800 to 2000 barrels per day—a remarkable record. Big Lake Oil Company No. 18, section 25, block 9, was completed for a production of 8753 barrels on April 15, 1925, and on May 22 was flowing 4557.32 barrels per day.

The nature of the Big Lake pay, a sandy, oolitic dolomite, with a porosity more evenly distributed and more uniform than the porosity of a limestone, dependent on cavities and fissures only, and therefore comparable in a general way to the porosity of an oil-bearing sandstone, is probably responsible for the stability of the production, but the example of this field as time goes on may serve to revise the current ideas as to the erratic nature of limestone.

Shallow Oil and Gas

The gas, which occurs with the 3000-foot oil pay, is, as has been mentioned, sulphur gas, with very dangerous qualities. However, the Big Lake field has developed a shallow horizon, with some oil and a high gas pressure of normal, non-poisonous gas, suitable for all purposes to which gas of commercial quality may be put. On February 9, 1925, Big Lake Oil Company No. 17, section 1, block 2, without warning, blew in as an enormous gasser from a depth of 2435 feet. The well ran wild through 10-inch casing for five days before it was successfully capped and closed. The gasser was of large volume, a gauge taken when it was still blowing wild recording 87,630,000 cubic feet of gas with 510 pounds rock pressure. This gas pressure has been found in adjacent tests at approximately the same depth, Big Lake No. 21 being in particular a large gasser.

Oil has also been found in this shallow horizon in several tests. In Texon No. 7, section 36, block 9, the oil went over the crown block on several occasions.

This shallow oil and gas is coming from typical Permian "red beds" of the Double Mountain formation, approxi-

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mately 500 feet above the main 3000-foot limestone or dolomite pay. The nature of the producing strata is entirely different from that of the deep pay. Samples of this upper pay examined by the author consisted of a soft red sandstone, composed of fine quartz grains, loosely cemented with iron oxide, and containing very thin layers of lignite, and some fragments of gray-white, crystalline limestone.

The discovery of commercial gas in large quantities will mean much to the field in the matter of cheap fuel for drilling operations; and to all West Texas, which as yet has no available supply of natural gas. However, production from this shallow horizon may be rather difficult to handle properly on account of the occurrence of a large amount of salt water in sands and gravels at the same depth.

Within the past few days a yet higher horizon has been found, approximately 500 feet above the 2500-2500-foot production. In Big Lake No. 29 sufficient gas was encountered at 1970 feet to blow the tools out of the hole, and this same gas was also encountered in Big Lake No. 28. It is reported that this gas is non-inflammable and that it will be analyzed to determine if there is a content of helium, the non-inflammable gas used in dirigibles.

The discovery of these shallow horizons in the Big Lake field only verifies what has so often happened before, that few fields of major size are developed without more than one oil and gas sand pay being uncovered, and lends plausibility to the thought that a deeper pay may be found somewhere below the 3000-foot level, whenever it may be thought necessary to prospect for deeper production.

Wildcats in Vicinity

The most intense wildcat activity in Reagan County has been on the edges of the Big Lake field, approximately in a rude circle bordering the Big Lake and Texon acreage. To date, this wildcatting has yielded only dry holes, sulphur water in most cases having been found at the depth where oil was expected. The occurrence of sulphur water seems to be general in the West Texas region near the top of the thick Permian lime series. The character of the sulphur water varies; in some cases it is black and very concentrated; in other cases it is a light green and turns colorless on exposure to the air.

It appears that the Texon Oil and Land Company and the Big Lake Oil Company have the entire productive area of the Big Lake field enclosed within the boundaries of their large holdings—an unusual and remarkable situation, seldom encountered in the petroleum industry.

The accompanying map of Reagan County shows wildcat activity, giving total depth of all dry holes. So far 13 dry holes have been completed in wildcat territory adjacent to the field, and four dry holes have been completed at a distance from the field—a total of 17 dry wildcat tests for the county. Counting the dry holes drilled on the edges of the field proper, Regan County has to date 23 dry holes, completed and abandoned.

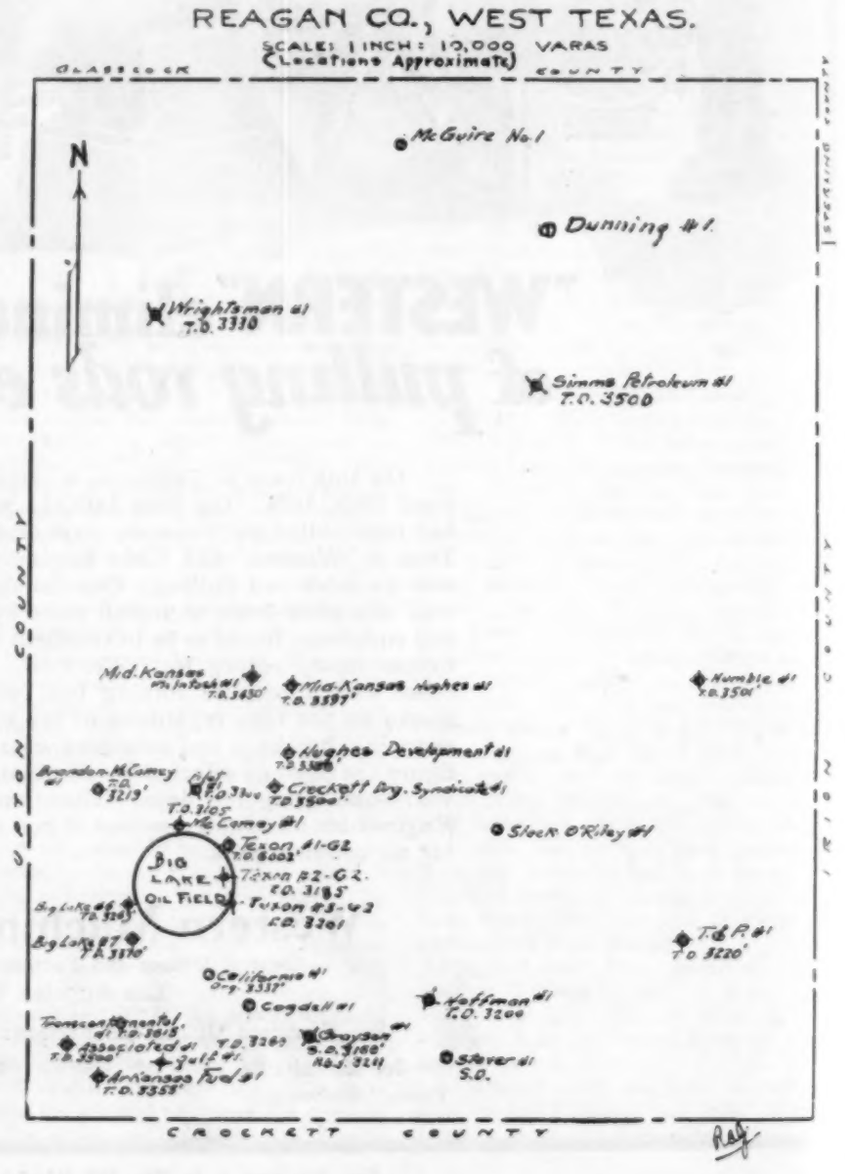
At present wildcat activity is much less than in the autumn and winter of 1924, when wildcatters were busily engaged in probing the area surrounding the Big Lake and Texon acreage; and there are now but four wildcats drilling in the country. Of these the test being put down by Wm. Dunning of Fort Worth on the Suggs ranch in the northeastern part of the county appears to be the most interesting and the most worthy of attention.

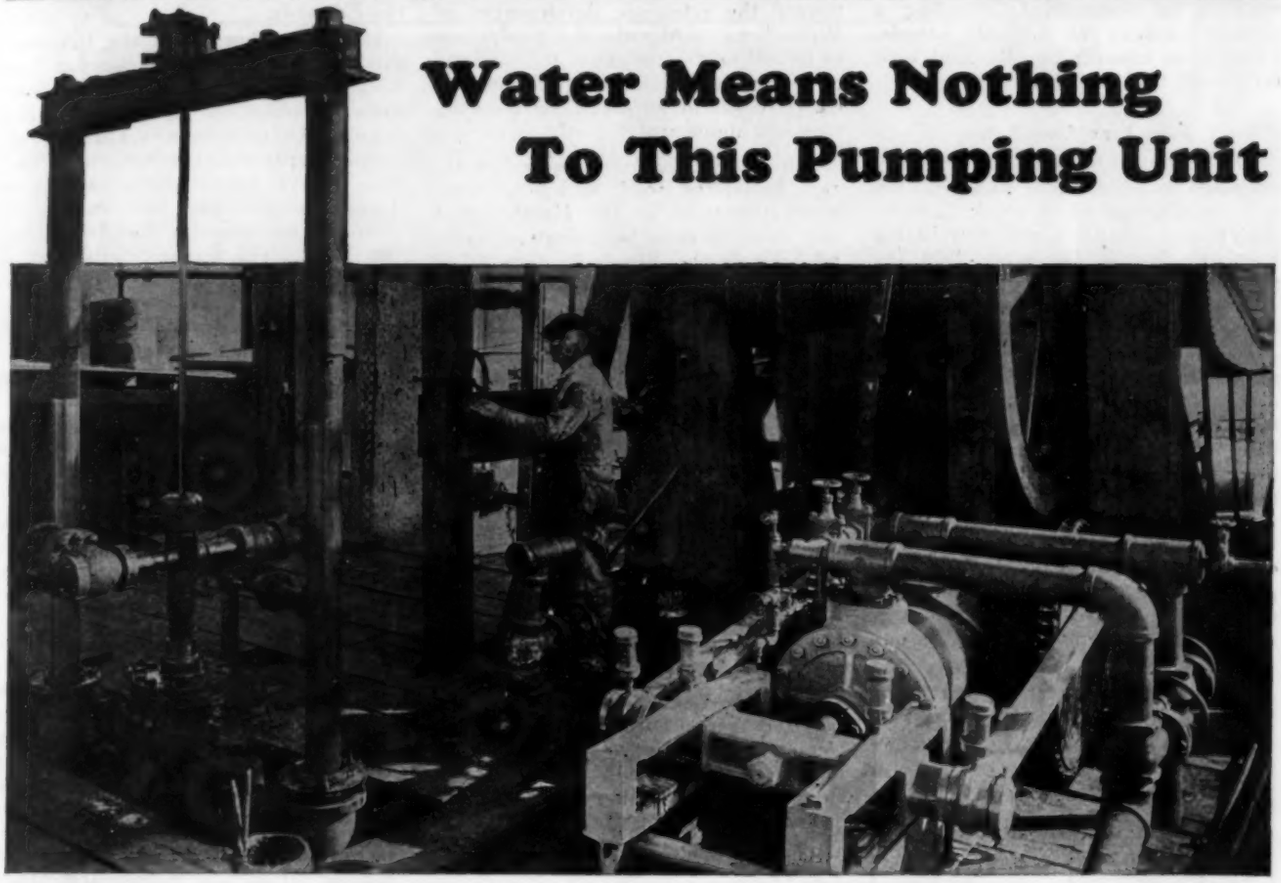
Use Cable Tools

The cable-tool system is used almost exclusively in the Big Lake field. One or two holes only have been drilled with rotary rigs. Cable tools have proven very satisfactory, but it would seem that combination rigs might be utilized successfully in the future, especially as the high gas pressure which has been encountered at 2400-2500 feet could be mudded off and handled more easily with the rotary than with standard tools.

The average cost of drilling a 3000-foot hole in the Big Lake field is about $27,000. In wildcat tests, in areas where the sequence of beds to be penetrated is not exactly known, and where fuel and transportation costs are higher, the average expense of a 3000 foot hole will run in the neighborhood of $35,000, less, in case of a dry hole, salvage on pipe pulled.

In October of 1924 the Marland Oil Company organized the Reagan County Crude Purchasing Company to purchase crude oil from the Big Lake Oil Company and the Texon Oil and Land Company, 10,000 barrels per day the first year and 20,000 barrels per day the second year. The tank farm of the Reagan County Crude Purchasing Company in the south half of section 11, block 11, University of Texas lands, on the townsite of the station of Kemper, nine miles east of the Big Lake field, is rapidly approaching completion. Six-





Water Means Nothing To This Pumping Unit

By the way; the two largest wells in the Rosecrans-Athens field, California, were brought in through our Crowell packers.

AS a matter of fact, the successful operation of the P. O. T. Co. Long Stroke Hydraulic Pumping Unit is not in the least impaired by water in the hole, but rather accelerated. For example, our unit has increased the net oil production from 100 to over 200 per cent in wells making 25 to 60 per cent water.

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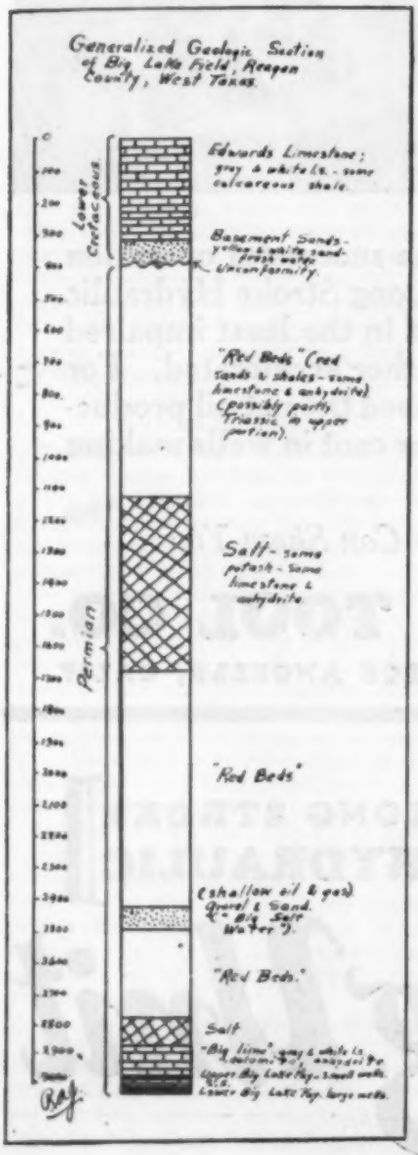
teen 80,000-barrel storage tanks will ultimately be constructed, affording a storage capacity of 1,280,000 barrels. Local lines connect the Marland tank farm with field storage.

Pipe Line Connection

The Marland Oil Company originally purposed to build a pipe line from the field, in addition to the tank farm of the Reagan County Crude Purchasing Company, but, in December, 1924, the pipe line project was taken over by the Humble Oil and Refining Company. Construction of an 8-inch line, with 20,000 barrels daily capacity, immediately began with remarkable energy and rapidity; on April 15 the line was fully completed and equipped from the field to Comyn, Comanche County, there connecting with the main Humble pipe line from North Texas, and on that date oil began to be pumped through the line. The efficiency and dispatch with which the Humble completed the pipe line is an example of the speed with which the oil industry moves. The Humble pipe line is one of the most important steps ever taken toward the economic development of West Texas. Already the production of the oil field is far above the capacity of the line, and Humble has closed contracts to handle surplus production by tank car movement.

San Angelo, 90 miles to the northeast by motor road, and 67½ miles along the route of the Humble pipe line, is the general headquarters of the oil men of the Big Lake area. The town of Big Lake, 12 miles east of the field, has the offices of the Texon Oil and Land Company, and is local headquarters for many operators. The station of Texon, in the heart of the field, consists of the up-to-the-minute camp of the Big Lake Oil Company, and the Texon Oil and Land Company has a large camp, Santa Rita, in the eastern part of the field. The town of Best, two miles east of the field, is an oil town, built on land leased from the University of Texas, and is the location of the machine shops and oil well supply houses which serve the field. Best is a thriving little city of typical oil field character.


Generalized Geologic Section of Big Lake Field, Reagan County, West Texas.
Lower Cretaceous
Edwards Limestone; gray & white ls. - some calcareous shale.
Basement Sands - yellow & white sand - fresh water
Unconformity.
"Red Beds" (Red sands & shales - some limestone & anhydrite) (possibly partly Triassic in upper portion).
Salt - some potash - some limestone & anhydrite
Permian
"Red Beds"
(shallow oil & gas) Gravel & Sand. (Big Salt Water ?).
"Red Beds."
Salt
"Big lime" gray & white ls. Calcareous shale, anhydrite
Upper Big Lake Hyp. Small wells.
Lower Big Lake Hyp. large wells.

The Big Lake field and the towns adjacent present in some ways a different aspect from that usually associated with oil fields and oil field towns. It is a common saying that when an oil field is found the heavens open, and it rains continually until development is over. However, this traditional oil field mud does not hold true in the Big Lake field. West Texas is a dusty, dusty country. While men and machinery in the fields of East Texas and the Gulf Coast are wallowing and miring in black mud, in the Big Lake field there is dust in undreamed of quantities.

General Geology

The Big Lake field and adjacent territory in West Texas offer geological problems that are particularly difficult of solution. The region is in the major geologic and physiographic province known as the Edwards Plateau, comprising all that high flat country of which the Edwards limestone is the surface outcrop over hundreds of square miles. The Edwards limestone is of Lower Cretaceous or Comanchean age, and mantles the Edwards Plateau in a comparatively thin rock skin, giving to the land its characteristic topography of mesa and canyon. It may be interesting to the operator to know that the limestone which is on the surface of the ground at the Big Lake field is the same formation which produces the oil of the Luling field, Caldwell County, northeast of San Antonio, although in the latter field it is 2000 feet underground.

The regional dip of the Edwards limestone is to the southeast toward the Gulf of Mexico at a very, very gentle inclination—eight to ten feet to the mile. Beneath the Edwards limestone lie the Basement sands, also of Lower Cretaceous age, and conformable with the Edwards.

But at the bottom of the Basement sands, which rest upon Permian "red beds" (or perhaps in some localities upon Triassic "red beds") is a great angular unconformity. This unconformity represents the immensely long time interval between the cessation of deposition of Permian beds and the initiation of deposition of Lower Cretaceous beds. The unconformity is that between the Paleozoic and the Mesozoic periods and it is one of the greatest unconformities in all geologic history. The Permian strata below this unconformity dip in a direction diametrically opposite to the dip of the Edwards limestone which appears at the surface, for the Permian beds dip to the northwest at a rate of approximately 30 to 50 feet to the mile.

The difficulty of the problem presented is apparent to the man with the most casual acquaintance with geology. The rocks which outcrop on the surface dip in one direction; the subterranean rocks which carry oil dip in the opposite direction. Subsurface information is therefore more valuable in the search for oil in the Big Lake area than surface geologic information; although as further study is made of the region, there will probably be found a structural relationship between the attitude of the surface Cretaceous limestones and the subterranean oil-bearing strata, and surface indications of structure should by no means be held as of no importance.

The writer by reason of certain confidential obligations, may not, in the present stage of search for geological knowledge of West Texas, discuss any specific geologic problems, that bear directly upon the location of oil reservoirs, such as the Marathon Fold, or the shore line conditions along the margin of the Paleozoic ocean of Permian days.

Concerning the structure of the Big Lake field it may be said that subsurface study has revealed the existence of a definite subsurface fold of surprising extent and magnitude. The dips off the structure to the north and to the east are remarkably steep and rapid when compared with the degree of dip which characterizes other parts of the fold. This has led to the belief that the structure may be faulted on the east side, while this condition may exist and should be watched for in the future study of the field, yet to date there is no positive or definite evidence of faulting. The three dry holes of the Texon Company on the east edge of the field—Texon No. 1, group 2, section 22, block 9, University of Texas land (which was drilled to a total depth of 6002 feet making it the deepest hole yet drilled in Texas); Texon No. 2, group 2, section 26, block 9, and Texon No. 3, group 2, section 35, block 9—have shown that production is cut off with surprising abruptness on the east

(Continued on page 77.)

OLD STYLE SWAB WOULDN'T PASS THROUGH CASING

Charles Delaney, driller and farm boss for the W. O. Dickerson Company, at Red Fork, Okla., cites several instances of wells with badly indented casings in which the GUIBERSON was the only swab that would operate. For this reason, and also because the GUIBERSON is efficient, bringing up a full load, he is using GUIBERSON Swabs consistently.

The photograph above shows the discharge from No. 3 Berry, Red Fork, while being swabbed by Delaney with a 6⅝" GUIBERSON. Photo at right shows Delaney at right, and A. F. Rux.

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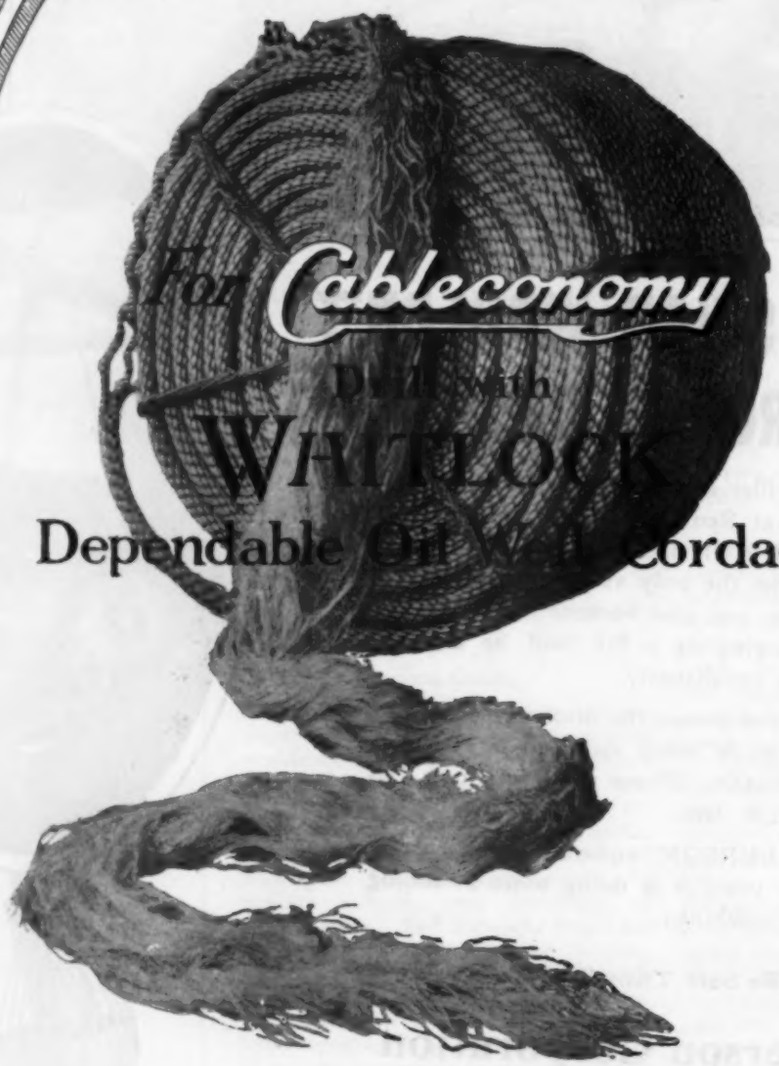

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New Methods in Gas Well Operation

Field men at annual meeting of Natural Gas Association of America are given benefit of valuable research

By E. O. Bennett and H. R. Pierce

Natural Gas Engineer and Consulting Petroleum Engineer of the Bureau of Mines

IN MANY localities it is desirable or necessary to hold definite back pressure on gas wells by restricting the flow. The writers have been working on a method for controlling well flow by small orifices placed in the flow line near the well head. Data obtained in this study indicate:

(1) That the control by orifices is satisfactory and reliable.

(2) That the open flow of any well may be determined at any time during its life without blowing the well.

(3) That the control equipment may be used for measuring the gas delivered from individual wells.

(4) That a recording pressure gauge on the control equipment gives a great deal of information about the condition of the well.

This paper is not offered as a complete discussion of the subject of well control, but is an outline to present some of the results thus far obtained. It is hoped that the information contained in this outline will be of benefit to operators and that it will create discussion which will be of assistance in completing the work. When the study is completed the results will be published by the Bureau of Mines.

Before any gas well may be controlled to deliver a definite percentage of its open flow capacity it is necessary to determine the relation of the working pressure and delivery to the rock pressure and open flow capacity. It is also necessary to have some absolute basis for comparing wells, and for indicating their potential capacities and conditions.

The open flow of gas wells at the sand (the quantity the well would produce if there were no resistance to its flow from the gas sand to atmosphere) has been taken as a logical basis of comparison. This gives a true measure of the potential capacity of the well and is independent of the size and length of the tubing or flow line.

Method of Finishing Gas Wells

Where gas wells are dry; that is, where they do not produce any oil or water, the gas is taken either from the well through a tubing inserted in the casing and packed above the gas sand, or through the casing which is landed above the gas sand. Where gas wells make water it is usually advisable to install a siphon line.

Siphon Lines

A siphon line[1] consists of a small size pipe, generally ¾ inch or 1 inch in diameter, run through the tubing to a depth below the producing horizon. It is packed off gas tight through a stuffing box where it leaves the tubing at the well head, and has a valve installed on it just outside of the tubing.

Operation of Siphon Lines

If enough water reaches the well to kill the gas flow, the siphon line will not function in this case the well may be bailed or pumped down to the point where the gas will flow again. The siphon line may be raised so that water and gas will enter, and it will then operate to remove the water. The siphon line is lowered as the water level recedes.

Another method of reviving wells fitted with siphon lines, but drowned out through lack of attention is to force a high pressure supply of gas, from an external source, down the siphon line into the tubing. The water will then be raised, in the same manner as with an air lift pump. If an external supply of gas under pressure from adjacent wells or a pipe line is not available, a portable compressor may be used.

The quantity of gas required to remove a given amount of water from a well fitted with a siphon line is less than the quantity required to raise the same amount of water through the tubing or casing.

Methods of Obtaining Data

The methods of obtaining the data used to determine the relation of the volume flowing, at working conditions, to the open flow of the well are as follows:

Case 1—Where the well is equipped with a siphon line.

The first step is to determine the rock pressure of the well. Next the well is opened wide and allowed to blow through the flow line to atmosphere until its discharge rate is constant. The time required for this will vary with different wells and may be from a few minutes to several hours. The volume delivered by the well under this open flow condition is measured by a calibrated funnel meter.

While the well is flowing to atmosphere the pressure at the bottom is determined by a dead weight tester connected to the siphon line. The pressure indicated by the dead weight tester is corrected for the weight of the column of gas in the siphon line, which is appreciable at high pressures because of the increase in gas density. The manifold on the dead weight tester is connected to the well head through ¼-inch copper tubing, so the tester can be used for measuring the well head pressure. However, for the open flow condition, the well head pressure is obtained by a mercury column, as the dead weight tester used will not

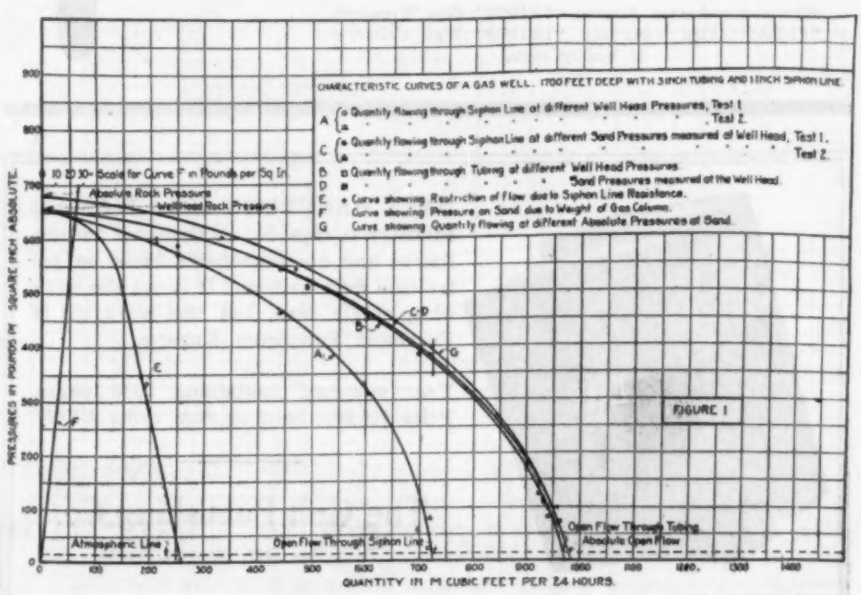
CHARACTERISTIC CURVES OF A GAS WELL. 1700 FEET DEEP WITH 3 INCH TUBING AND 1 INCH SIPHON LINE.
A Quantity flowing through Siphon Line at different Well Head Pressures, Test 1
Test 2.
C Quantity flowing through Siphon Line at different Sand Pressures measured at Well Head, Test 1.
Test 2.
B Quantity flowing through Tubing at different Well Head Pressures.
D Sand Pressures measured at the Well Head.
E Curve showing Restriction of Flow due to Siphon Line Resistance.
F Curve showing Pressure on Sand due to Weight of Gas Column.
G Curve showing Quantity flowing at different Absolute Pressures at Sand.
10 20 30 Scale for Curve "F" in Pounds per Sq. In.
Absolute Rock Pressure
Wellhead Rock Pressure
PRESSURES IN POUNDS PER SQUARE INCH ABSOLUTE.
Atmospheric Line
Open Flow Through Siphon Line
Open Flow Through Tubing
Absolute Open Flow
QUANTITY IN M CUBIC FEET PER 24 HOURS.

FIGURE 1

[1]Swigert, T. E., and Boecher, C. E., Manual for Oil and Gas Operations: Bull. 232, Bureau of Mines, 1923, pp. 83-85.

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measure pressures less than 10 pounds per square inch.

After the open flow of the well is taken, the valves on a throttling manifold installed at the well discharge are adjusted to control the quantity of gas flowing. The rates of flow are varied by suitable steps from open flow to zero. The pressure in the well head and the pressure in the siphon line are measured at each rate of flow. Readings are taken only after careful checks have shown that equilibrium in flowing conditions is established.

The pressure measured through the siphon line, when corrected for the weight of the gas column, gives the true pressure on the gas sand. This will be called "back-pressure on the sand" in the following discussion. It will be noted that this is not the ordinary usage of "back pressure", as this term is usually applied to the pressure at the well head. The pressure at the well head will vary with the same rate of flow through the sand for each different size an dlength of tubing or siphon line in the well. Therefore the well head pressure does not give a suitable basis for the correlation of delivery to open flow.

Case 2—Where the gas well is not fitted with a siphon line.

Where no siphon line is installed the back pressure on the sand can not be measured directly and its determination becomes somewhat involved. However, when the dimensions of the well, the quantity of gas flowing, and the pressure at the well head are known the back pressure on the sand can be determined by means of a suitable flow formula. Tests were run to obtain a formula which is applicable to conditions existing in gas well tubing.

Graphical Presentation of Results

Figure 1 shows a typical set of curves plotted from data taken on a well equipped with a siphon line. This particular well had a 1-inch siphon line and 3-inch tubing.

The following nomenclature is used in this discussion:

Bh = the back pressure in the well head, pounds per square inch absolute.

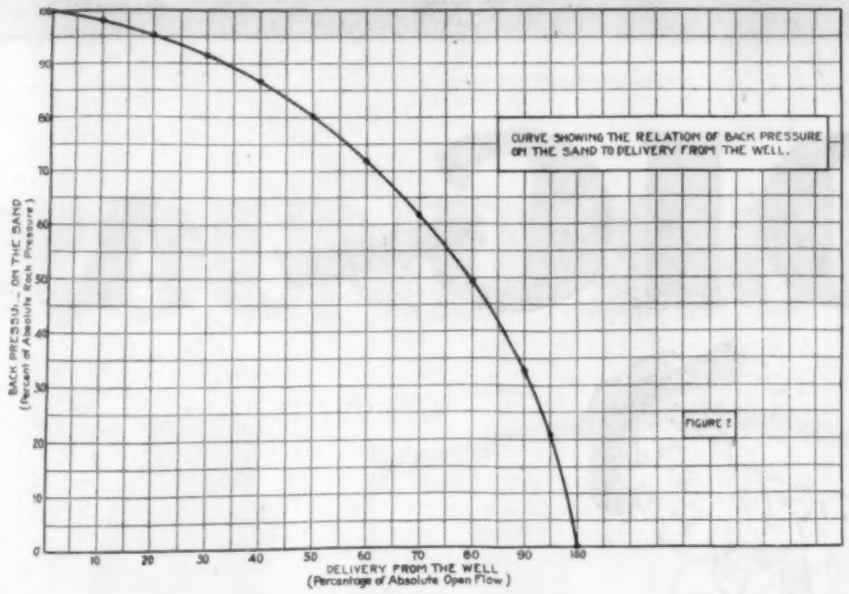
Bs = the back pressure at the sand in the well, pounds per square inch absolute.

Ba = the pressure at the top of the siphon line when the gas is flowing through the tubing or the pressure at the top of the tubing when the gas is flowing through the siphon line, pounds per square inch absolute. (Bz = Bs — pressure due to weight of gas column.)

Rh = the rock pressure at the well head, pounds per square inch absolute.

Rs = the rock pressure at the sand in the well (Rh + pressure due to weight of gas column), pounds per square inch absolute.

F = the open flow of the well through


CURVE SHOWING THE RELATION OF BACK PRESSURE ON THE SAND TO DELIVERY FROM THE WELL.
FIGURE 2
BACK PRESSURE ON THE SAND (Percent of Absolute Rock Pressure)
DELIVERY FROM THE WELL (Percentage of Absolute Open Flow)

the flow line, thousands of cubic feet per 24 hours.

Fs = absolute open flow (the open flow that would occur if there were no resistance between the gas sand and the well head), thousands of cubic feet per 24 hours.

Q = quantity of gas flowing, thousands of cubic feet per 24 hours.

Referring to Figure 1:

Curve A is plotted from data obtained when the gas was flowing through the siphon line only. It shows the relation between Q, the quantity of gas flowing through the siphon line, and Bh, the back pressure in the siphon line at the well head. Curve B is plotted from data obtained when the gas was flowing through the tubing only. It shows the relation between Q, the quantity flowing through the tubing, and the back pressure in the tubing, Bh, at the well head. Curve C corresponds to Curve A, but the quanity, Q, of gas flowing through the siphon line, is plotted against Bz, the pressure at the top of the tubing, instead of the back pressure on the siphon line. Likewise, Curve D corresponds to Curve B, but the quantity, Q, flowing through the tubing, is plotted against the pressure at the top of the siphon line. Curves C and D coincide and are shown as a single line. Data obtained experimentally for plotting Curve C allow the projection of this curve to a point where the pressure on Curve A is atmospheric. This point is marked by the vertical line across the curve C-D. The pressure shown at this point, on Curve C-D, is the static pressure measured at the top of tubing, when the pressure at the bottom of the well causes the quantity, Q, to flow through the siphon line with its upper end wide open to atmosphere. Where the flow line in the well is large, and the resistance to the flow is small, experimental data may be obtained which will permit drawing this curve to lower pressures. This is shown by Curve D, which is extended to pressure values near atmosphere. Curve E shows the restriction in flow caused by resistance in the siphon line at different well head pressures. The abscissae of this curve are the horizontal intercepts between curves A and C-D. The ordinates are the pressure values at the well head. A similar curve may be drawn showing the restriction in flow caused by resistance in the tubing. However, as the intercepts between curves B and C-D are very small, this curve is not shown on Figure 1.

Curve E is approximately straight below the point where the pressure difference between curves A and C-D is greater than about 3 per cent of the back pressure shown by Curve A. For pressure differences less than about 3 per cent of the back pressure, E curves toward, and passes through, the point representing the rock pressure measured at the well head.

Data plotted from many tests indicate that the relations expressed in the foregoing paragraph are true for all curves of the type of Curve E. It is thought that there is a definite mathematical relation between curves of the types A and C, and the writers hope to determine this relation before the work on this problem is completed.

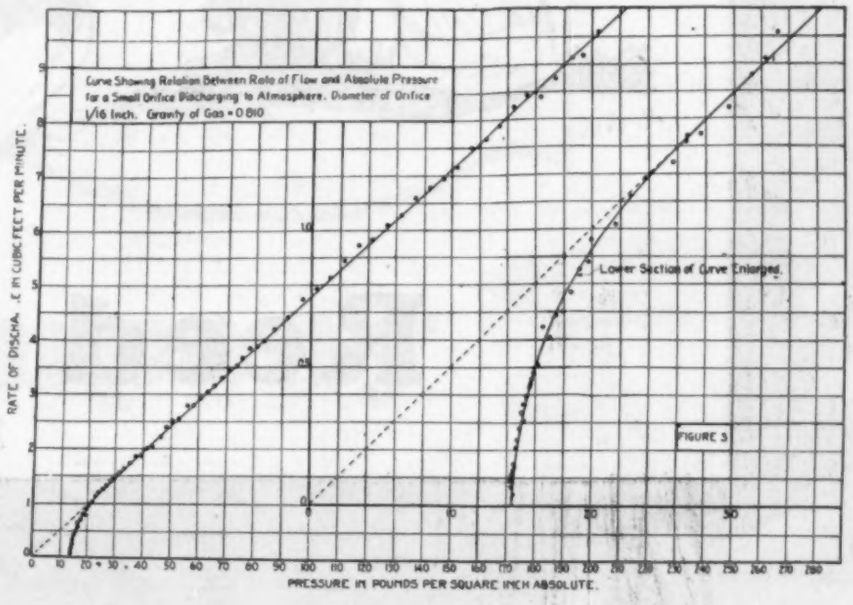
Where a well having a small flow line is tested, the experimental points, through which Curve C is drawn, terminate far above atmospheric pressure. However, Curve C may be projected by the aid of Curve E extended as a straight line. This is accomplished by adding the abscissae of Curve B to the abscissae of Curve A.

The point where Curve C-D intersects the atmospheric line represents the open flow which would occur if there were no resistance between the gas sand and atmosphere. It is the absolute open flow of the well. In the specific case of the well from which the data shown on Figure 1 were obtained, the actual open flow through the siphon line was much less than through the tubing, yet each test indicates the same absolute open flow.

Curve F shows the amount by which the pressure at the sand exceeds the pressure at the well head because of the weight of the gas column. When the values taken from this curve are added to the ordinates of Curve C-D they give points through which Curve G may be drawn. Curve G shows the relation of the absolute pressure existing at the gas sand to the flow from the well. It is the fundamental curve for comparing wells and for determining the relations which exist between pressure and quantity flowing.

The curve of Figure 2 shows the relation of the back pressure on the sand to the quantity of gas flowing, when the back pressure and quantity are expressed in percentages of the absolute rock pressure and absolute open flow, respectively. From this curve and those of Figure 1 the back pressure,

(Continued on page 78.)


Curve Showing Relation Between Rate of Flow and Absolute Pressure for a Small Orifice Discharging to Atmosphere. Diameter of Orifice 1/16 Inch. Gravity of Gas = 0.610
Lower Section of Curve Enlarged.
FIGURE 3
RATE OF DISCHARGE IN CUBIC FEET PER MINUTE.
PRESSURE IN POUNDS PER SQUARE INCH ABSOLUTE.

DIG— A

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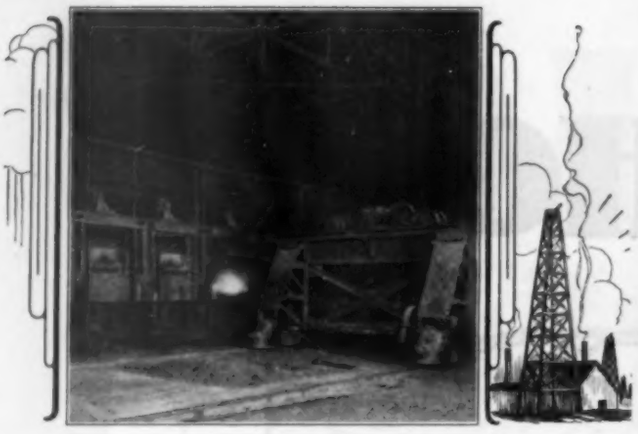

CHARGING OPEN HEARTH FURNACES

The above photograph shows the first step in the manufacture of SHEFFIELD SUCKER RODS—the automatic charging of the open hearth furnaces in which SHEFFIELD SUCKER ROD STEEL is made.

The steel used in SHEFFIELD SUCKER RODS is a high grade special process steel. It is a steel that enables SHEFFIELD RODS to withstand severe stress, vibration and long usage, as no other sucker rod will. (No SHEFFIELD SUCKER ROD has ever broken at the pin.)

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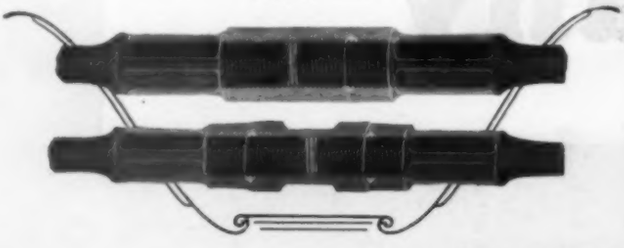
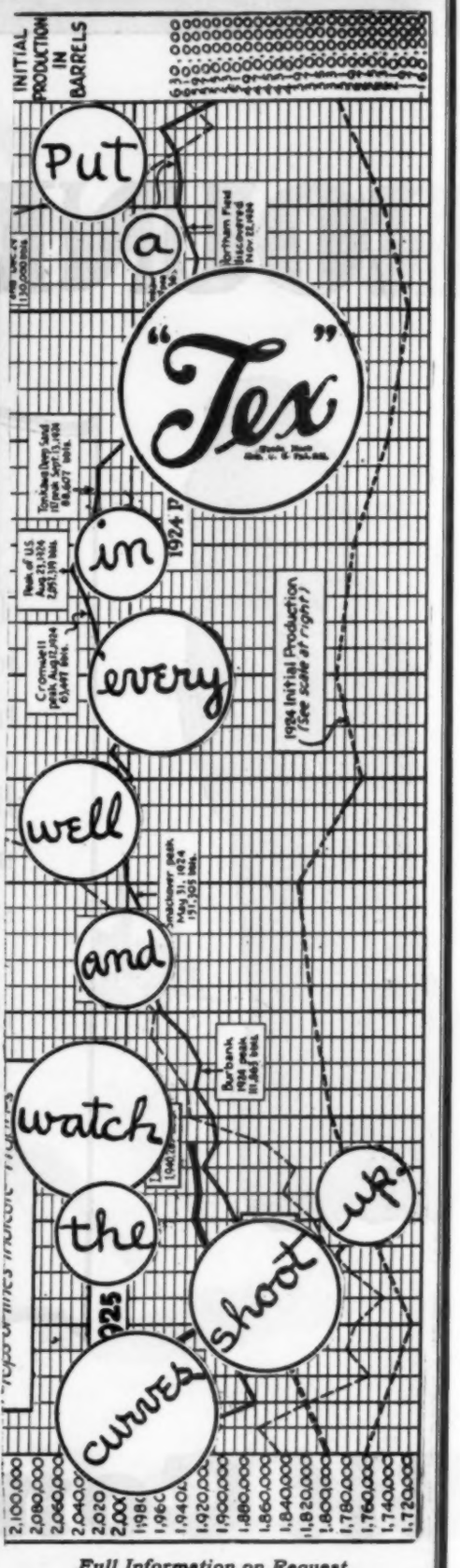


Screw Type Oversize Standing Valve



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FIELD NOTES AND PRODUCTION STATISTICS

Third Sand At Smackover Has Possibilities

Field which has broken production records may have another flood from new found lower strata

El Dorado, Ark.—A third oil-bearing sand was tapped at Smackover last week when the Texas Pacific Coal and Oil Company's Laney No. 5, in the heavy oil district, was bailed in from three feet of pay at a total depth of 2583 feet. The well came in last Wednesday with an initial production of 150 barrels of 23½ gravity oil per day by heads; and its flow has increased to around 1500 barrels per day, as at present.

The newly-found sand, which is believed to be of the Blossom formation, was cored at 2580-83 feet before casing was set at 2578 feet. In drilling out the plug the crew drilled only about one foot or less below the casing seat, as at that point the well threatened to blow out. In fact, the rat-hole has never been ramed out; and there is no telling how much oil the well might make if properly finished.

The Blossom sand discovery well is located in the northwest corner of the southeast quarter of the northeast quarter of section 31-15-15, of the East Field, at a point about a mile and a half southwest from the original Nacatoch sand discovery well, drilled by the V. K. F. Drilling Company in section 29-15-15; and about three and a quarter miles northwest from the Lion Oil and Refining Company's Marlbrook sand well in section 3-16-15, which started the deep sand campaign in February of this year. It is located about one mile south from the northern limit of the shallow sand production, and about a half mile beyond the present northwestern boundary of second sand production.

Third Sand Possibilities

Since the world's best records have been smashed by deep sand dvelopments at Smackover, one is at a loss to find terms in which to picture the boom conditions which may follow if the Blossom sand fulfills expectations and proves productive throughout the Smackover districts. The opinion is expressed that, provided the crude market does not collapse under the burden of the increased flood of oil from an entirely new reservoir, the third-sand boom which now seems sure to follow may rival and exceed, both in volume and intensity the second-sand campaign, which is now at its height. This opinion is expressed, with full knowledge that available shipping and storage facilities are taxed to capacity to handle the present production from the Nacatoch and Marlbrook sands, but with the conviction that there are so many small operators intrenched at Smackover that a shut-down agreement, or any other plan to retard drilling, is impossible of execution. Since the wide extent of the Norphlet Dome is well known, and because of the fact that the Blossom sand discovery well appears to be of better calibre than the first wells completed in the Nacatoch and Marlbrook sands, one is warranted in assuming that the third sand may be as fertile as the first and second levels. Although the deep sand drilling cambaign has been in progress for more than four months, the average second sand well, as of today, is earning a net income of around $1,000,000 per day. So long as such profits lure producers onward there will be little or no relay in the exploration of the Blossom and other deep sands.

Oil in Demand

Since the passing of the initial panic which attended the first realization that the world's greatest production records were to be smashed, and before purchasing companies had made arrangements to accept and handle the vast flood of oil the demand for Smackover crude has been notably brisk. Even though the general market structure has been firm throughout recent months prominent authorities have been amazed at the remarkable demand for Smackover oil. Crude buyers of all types have swarmed to Arkansas from all parts of the United States and from Europe to participate in the boutiful harvest of new production. The posted price, which fell to 40 cents per barrel during the panicky period, reacted to double that figure in the face of a rising flood of oil which surpassed the best records of the wonder pools of Texas, Oklahoma and California.

Of course, market conditions may change. Storage may be filled, shipping facilities may prove inadequate, and another panic may ensue. In fact, another downward fluctuation of posted prices is to be expected, if the Blossom sand proves as prolific as the Nacatoch and Marlbrook horizons. Nevertheless, when twenty and thirty thousand barrels gushers may be had, and when average wells make in excess of 2500 barrels per day, producers can make handsome profits, even at 40 cents per barrel.

It is the opinion of competent authorities, based on current demand, that the present market can absorb up to one-half million barrels of oil per day from the Smackover district. Second-sand production is declining sharply from day to day; and, as of today, shows a loss of more than 110,000 barrels since the peak of 393,000 reached on May 26. Although third-sand development may receive impetus from the second-sand boom, which has recruited men, money and equipment from all the oil fields of America, Blossom sand production is not likely to attain such proportions within the next sixty days as to raise the field's total to a figure in excess of the demand. Shipping facilities are being increased and extended by the construction of additional pipe lines and pumping stations, and of a number of gathering and loading systems through which great quantities of oil can be delivered to tank cars.

According to a survey of the field made on June 8 Smackover production now averages about as follows:

Nacatoch sand production	46,000
Marlbrook sand production	283,000
Blossom sand production	1,500
Total heavy oil	330,500
Louann light oil	31,000
Total, Smackover district	361,500

On May 26, when Marlbrook production was at its peak, a total of 473,000 barrels was recorded.

Following the completion of the T-P Company's third-sand well, the Gulf Refining Company has resumed drilling in its Scott No. 1, a second-sand well recently completed at a location near the center of section 34-15-15, on the northeastern edge of production. An oil-bearing sand has been cored at from 2497 to 2500 feet. Additional coring is to be done before a test is made.

The Unity Petroleum Company's Berry No. 6, located in the northwest quarter of the southwest quarter of section 33-15-15, Ouachita County, was completed with an initial production of 10,000 barrels of clean oil per day from the Marlbrook formation.

Montague County Gasser Proving Real Problem

Wichita Falls, Texas. — Numerous craters formed in the land surrounding the Humphreys Corporation's heavy gasser producing from shallow sand in the Nocona field in upper Montague County has created a very difficult task for its owners in regaining control of the gas production, and the services of a specialist from the Washington office of the Bureau of Mines have been enlisted. Fred B. Tough made a hurried trip from Washington, and upon his arrival at the Humphreys Corporation's offices in Nocona Saturday a conference was held with F. W. DeWolf, geologist and manager, Pete Urschel, production superintendent, and other officials that have been working continuously in trying to control the gas flow since it broke loose nearly one month ago, while making in excess of 25 million cubic feet of dry gas at a total depth of 833 feet.

The conference Saturday with the Bureau of Mines' representatives resulted in a decision being reached to first try and lubricate off the gas producing horizons exposed in the well, and equipment was being mobilized early this week to begin work on sealing off the gas pay. The numerous craters surrounding the well makes the work extremely hazardous, and every precaution is being taken to prevent fire or an explosion.

The wild gasser is the second test drilled on the W. W. Jones land by the Humphreys Corporation, and broken gas sand was logged from 527 to 705 feet, with the main gas production coming from pay at 560-62 feet. Iron oxide was used in with the rotary mud in negotiating this gas pay successfully, and a string of 6⅝-inch casing was set and cemented at 833 feet, where coring revealed a rich oil sand. The crew engaged in cementing the small string did not secure the nipple to 15½-inch surface casing, and while the well was left unguarded the pressure of the cement pump caused fittings to break loose. Most of the fresh cement was blown from the hole, and the gas worked its way up behind the 6⅝ casing, resulting in craters. Efforts to close in the well brought forth more craters. In combating the wild flow of gas, cotton seed, chopped rope and mud were pumped into the hole, and unsuccessful efforts were made to close in the craters. An attempt was also made to lower a string of 10-inch casing down between the surface and 6⅝ casing, and force heavy mud inside and outside the ten-inch.

Lockhart Production 15,000 Barrels from 117 Wells

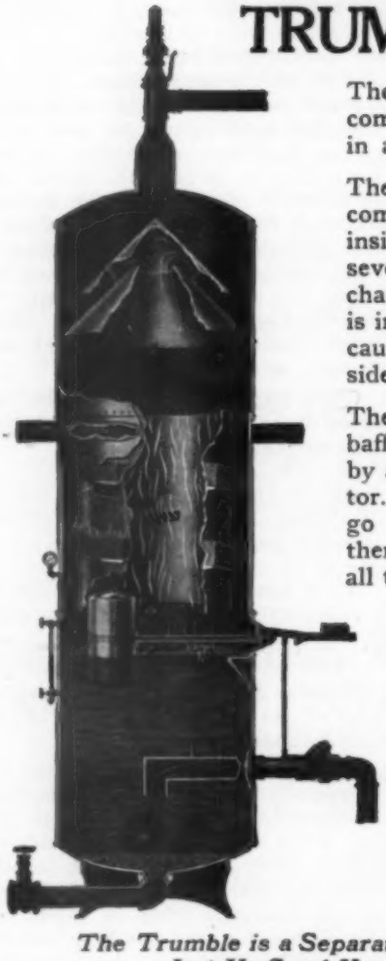
Lockhart, Texas.—For the first time since the Lockhart shallow oil field was discovered three months ago the daily production has passed the 15,000-barrel mark. During May 63,000 barrels of oil was piped by the Sun Oil Company from the 100-acre lease of the A. H. Gomillion tract.

Pipe line reports available for the week are as follows: Magnolia Petroleum Company, which also runs oil for the Humble and Gulf, registered 45,467 barrels. The Grayburg, which runs the oil to its refinery at San Antonio, was around 2000 barrels. The Atlantic Production runs amounted to 5073 barrels.

There are 117 producers in the field, covering an area a mile wide and two miles long.

Much interest is being shown in the Witherspoon Oil Company's No. 1 Branch, which has passed the 1100-foot depth. Shallow oil is expected to be found around 1300 feet. No. 1 Davis of E. L. Smith Oil Company is rigging up. Churchill Armstrong's No. 1 Riddle is drilling at 2000 feet in Eagle Ford.

HERE'S HOW THE TRUMBLE WORKS:



The gas and oil piped from the well comes into the Trumble separator in a tangent.

The centrifugal baffle takes the incoming oil and gas around the entire inside surface of the separator several times and gives the gas a chance to separate from the oil. It is impossible for the oil to drop and cause foaming as it clings to the sidewalls.

The gas goes back up through the baffle and is kept from channeling by a baffle in the top of the separator. It is impossible for any gas to go out through the oil outlet as there is a seal over the oil outlet at all times.

The centrifugal method of separation is the best method ever used, the same as that used in separating gasoline and water. The floats are non-collapsible as the internal and external pressures are equalized, therefore, the SLIDE and SAFE valves have to work, as they operate automatically with the float.

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Two More Bazette Structure Wildcats Show for Failures

Corsicana, Texas. — Two wildcats drilled on the southwest end of the Bazette structure in the East Central Texas fault region flowed salt water and gas when bailed in the Woodbine sand horizon at 3004 feet late last week, thereby further disproving the high priced leases and royalty interests in this area for oil possibilities. Rowan-Edson & Peeples' W. M. Warren 1, and Bob Penn-W. C. Windsor et al's G. L. Vinson 1 are the latest two wildcat failures recorded, and both logged the "key" formations higher than most of the 20-odd tests already abandoned on and around the Bazette structure. These two tests logged traces of oil in the Woodbine sand formation at 3000-04 feet, and both flowed water with considerable gas when bailed.

Two more wildcats are yet to be completed at Bazette. Gilbert Johnson et al, who have participated in the drilling of eight failures to date in this area, are drilling below 1800 feet on the J. W. Greer 5-acre lease, located less than one mile northeast of Bob Penn and others' Vinson test, while Vacuum Oil Company and Bert Prince are jointly interested in a test spudded early this week on the S. M. Huggins 121-acre lease, located on the northeast end of the Bazette structure and near the Trinity river. Fred Haynes and associates have made a new location across the river in Henderson County on the E. G. Bounds land, Henry Jeffreys survey, and will drill shortly to test a structure picked by geologists of the Humphreys Corporation.

Kaufman County, which has exacted a heavy quota of dry holes since oil was first found on the fault line in East Central Texas, is receiving a lone test by Truett Cranfill-Lyles and others on the Mrs. E. J. Massingill 110-acre farm, Phillip Walker survey, and early this week a core was being taken in the cap rock at 2988 feet. This test logged the Austin chalk at 1933-2502 feet, with a surface elevation of 463 feet. Some lease buying is now underway in Kaufman County, and Humble is blocking up additional protection to the west of its former play through this county.

Two unusually deep tests are now underway in the East Central Texas fault region, and the Rio Bravo Oil Company's H. & T. C. railroad right of way No. 14 in the south end of the town of Wortham has reached a depth of 4400 feet. In northeast Navarro County and several miles northeast of the town of Kerens, Elliott & Nicolle's D. J. Westbrook 1, H. H. Horn survey, is drilling ahead below 3640 feet, after reporting a number of showings of gas and oil in thin layers of sand, which were not thick enough to afford commercial production.

The long row of gassers extending to the southwest of the old Richland field in Navarro County towards the town of Currie is the only commercial gas area from the Woodbine sand in East Central Texas. Four gassers have been completed in a straight line extending about 6300 feet in length, and some possibilities exist for a narrow oil pool on the east flank of these gassers. Barkley-Meadows et al's A. Hilburn 1 will probably be a deciding factor on the possibilities of oil existing when drilling is resumed later this week after cementing casing at 2930 feet. This test logged the Austin chalk at 2117-2560 feet, which is much higher structurally than any of the gassers that are known to have split the fault line in the chalk horizon, and far enough to the east of the gas area to make a decisive test of the Woodbine.

Frick-Reid Promotes Gulf Coast District Manager

Houston, Texas.—A. I. Brainard, for several years manager of the Gulf Coast district for Frick-Reid Supply Company, has been promoted to general district manager for the Southwestern territory, which includes Arkansas, Louisiana, Texas and New Mexico. Headquarters will be in Houston. In his new position Mr. Brainard will have supervision over the states named.

Mr. Brainard has been with Frick-Reid for 14 years, and prior to coming to Houston four years ago, was manager of the Wichita Falls district of the company.

Frick-Reid controls the Beaumont Iron Works, Beaumont, Texas, and it is from this plant that much of the equipment handled by Frick - Reid stores in this district comes.

A. I. BRAINARD

Two Wildcat Wells Extend North Texas Production

Wichita Falls, Texas.—The completion of a 230 barrel initial well on wildcat acreage in southeast corner of Baylor County last week from sand at 1443-44½ feet was immediately followed by active lease trading, and prices on close in acreage climbed to $1000 per acre, half cash. This well was drilled by Mel Richards-L. E. Sheldon and others on the W. B. Mills ranch, section 2428, or about six thousand feet northwest of a small wildcat pumper brought in by Brit Cranfill et al on April 12, 1924, from sand at 1432-36 feet. The nearest field is located about five miles to the southeast in Archer County. Gulf, Texas, Shaw & Rathke, Richards & Sheldon have each made locations, and a number of others are contemplated. This new discovery revives the possibilities of Baylor County becoming one of the commercial oil districts in North Texas after experiencing numerous wildcat failures.

Wilbarger County furnished a new wildcat strike early this week when W. J. Dyson et al's Waggoner 1, located in southeast corner of section 46, block 4, began flowing by small heads while drilling in oil sand at 1871-76 feet. This wildcat is in the general trend between the South Vernon and Electra fields, and the nearest production is three-quarters of a mile to the southeast in section 42, where a small pumper was scored from sand at 2307 feet.

The most recent test for deep production in Archer County drilled by Fred B. Foster & Company on the Andrews land has been shut down to abandon after reaching a depth of 3605 feet. The Litchfield - Carpenter pool in upper Young County was extended several locations north last week when Simms Oil Company's H. B. Cheeves 1 swabbed at rate of 250 barrels oil daily from regular sand at 1012-22 feet.

Gypsy Test on Hansen Makes Well at 3235 Feet

Wichita, Kan.—The Gypsy Oil Company's No. 1 Hansen, a mile east of the Rainbow Bend field in Cowley County, is rated at 150 barrels while yet incomplete at 3235 feet. The well last week was thought to be dry, but further drilling caused oil to rise 2000 feet in the hole and later the well started flowing on its own gas pressure.

The new producer is located in the northwest of the southwest of the southeast of section 28-33-3. The completion of the Hansen producer further substantiates the belief of operators that the Railbow sand extends across the Arkansas River and that wells in the riverbed will prove producers.

A number of suits are now pending on riverbed land and the new well should result in further action along this line. The determining factor is whether or not the river is a navigable stream. The Supreme Court of the United States has previously handed

down a decision that the river is not a navigable stream.

The Turtle well near Geuda Springs, the property of the Waite Phillips Company, is reported to be logging formations similar to those in the Rainbow Bend field and is now below 2800 feet. This test is located in section 7-34-2.

In Western Kansas the Russell pool has two new producers, which has swelled the daily production of the field to 5500 barrels. The Streeter, Stearns and Yankey No. 3 Ed. Oswald is swabbing 14 barrels per hour from a total depth of 2939 feet, while the Valerius Oil and Gas Company new well on the Oswald-Valerius tract gauged almost 500 barrels per day as initial production.

Marland, Franklin and Locke Are Optimistic

Tulsa, Okla.—Observations of three men in close touch with the industry delivered at widely separated places the last week indicate that the crude market is on a sound price basis at this time. E. W. Marland of Ponca City, Okla., president of the Marland Oil Company, expresses the belief that the demand for light oil is increasing daily, while production of this grade is decreasing daily. He also points to the constant withdrawal from storage of both light crudes and gasoline and the present improved demand for motor fuel.

In a talk before the Okmulgee (Oklahoma) District Oil and Gas Association, June 6, W. C. Franklin of Tulsa, vice president of the Tidal Oil Company and president of the Oklahoma-Kansas division of the Mid-Continent Oil and Gas Association, made a plea for a sound economic study of the oil business with a closer regard for cost of production and means wherewith to reduce operating expenses at no sacrifice to crude recovery. This would, in turn, he pointed out, reduce the ultimate cost to the consumer and make petroleum products even more universally obtainable.

George D. Locke of Chicago, vice president of the Barnsdall Corporation, who is in Tulsa, expects an advance in Mid-Continent crude and bases this belief on the continued improvement in the demand for gasoline and the fact that light oil production is declining right at a time of the year when gasoline consumption attains its height.

Devil's Steel Hand

Another "Tough" Fishing Job!

—and again the Devil's Steel Hand "Does Its Stuff"

Landreth Production Corp., drilling K. Gratz No. 2, six miles south of Breckenridge, lost a string of tools in an 18-inch hole.

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By that afternoon they had caught the tools and jarred them out. Meanwhile they had rushed a 15½-inch Devil's Steel Hand (the largest regular stock size) from Breckenridge.

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DEVIL'S STEEL HAND and PITCHFORK

Golf Tournament to Close A. P. I. Committee Sessions

Dallas, Texas.—Members of the standardization committees of the American Petroleum Institute will devote a half day to golf, following the meeting scheduled for three days here next week. The joint conference will last from Monday through Wednesday. Thursday morning will bring the golf tournament on links of the Brook Hollow Country Club. That evening there will be a dinner at the Dallas Athletic Club. Prizes of the golf tournament will be awarded then.

Meetings of the committees will be at the Adolphus Hotel. Arrangements have been completed by C. A. Young, director of standardization.

The conference will open with a general meeting, when J. Edgar Pew, president of the American Petroleum Institute and chairman of the general committee on standardization, will deliver an address of welcome. After this each committee will meet in a room designated and the remainder of the day will be devoted to these separate sessions.

In the evening chairmen of the national committees and secretaries will meet in a general conference to review results of the separate sessions and arrange for such joint conferences as may be necessary.

Tuesday will be given over to joint committee meetings.

Wednesday will bring a general session of all committees in the morning, while the afternoon will be the occasion of a joint session on special subjects.

Sheldon Clark of Chicago has been elected a vice president of the Sinclair Consolidated Oil Corporation, succeeding to the vacancy made by the recent death of Charles E. Braley of Kansas City.

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Galveston, Texas

Analysis of "Wastes" in the Oil Industry

(Continued from page 34.)

acres. The ideal minimum economic unit for shallow, low-pressure wells, I would put at the limit of a single pumping power for, say, twenty-five wells, so that, according to depth and productive conditions, it will range from 50 to 100 acres. These figures are suggested purely upon practical operating conditions and do not touch the subject of limiting the bringing-in of new wells.

In the case of gas wells, the minimum practical unit for high-presure, large volume wells should be 40 acres and, for low-pressure, low-volume wells 160 acres, and preferably, from a conservation standpoint, still larger, since every well drilled in a gas area causes some waste in drilling, (though now cut to a minimum) and some leakage. My figures given above for both oil and gas wells are to be taken as suggestive only and a committee should be appointed to gather the facts and draw up specific recommendations for specific sets of conditions. Minimum areas for gas fields are different from those for oil fields—and different rules should apply.

Community Leases:

I consider it practical to obtain community leases only when they can be arranged in advance of development of an area. The competition in leasing has made this form of lease rarely possible, even in the restricted sense of the landowners' agreement to a single well opening a pool. Education of the landowners to an understanding of the community lease in the broader sense of pooling their royalty interests is required before such a lease would be obtainable for the complete development of a pool.

Cooperative Leasing by Oil Companies:

A pooling of the leasing interests by companies in a given locality, which would be possible with a modification of the Sherman Anti-Trust Law, would go far toward solving the difficulty in limiting the opening of new pools. In this instance, a company would be organized for the local operation and, through this company, a joint management effected. In order to still permit the refining companies and others interested therein to get their proportion of the production of the company, the oil could be allocated proportionate to the stock-ownership, provided that such as desired their prorata put lines into the stock tanks to take it.

We conclude, therefore: 1. *That the elimination of drilling on very small units is highly desirable from an economic point of view,* and this is the chief value of such units since it reduces the cost of obtaining oil by cutting down the number of wells drilled. The minimum lease unit must, however, vary with the conditions and a special study of governing principles, by a committee, should be made to summarize the best experience to cover the varying conditions.

The public interest is affected chiefly in the matter of town-lot drilling and this can be restricted as set out elsewhere herein.

2. *As a factor in the opening of new pools:*

We would all like to see some arrangement whereby it would be impossible for the owner of a small lease to dictate the time of drilling-in of an oil pool and thereby forcing over production on the industry. The mere limitation induced by an arbitrarily set up minimum area would not serve the purpose because of the varying size of oil pools, from 40 to 18,000 acres each. To base it, say, on the agreement of ownership of two-thirds of any structure seems the most logical basis, but this has the handicap of difficulty of agreement as to area involved and not always determinable in advance, as well as the secretiveness of companies regarding the same.

3. *Retarding Production:*

A minimum lease area is of little or no value in retarding production of gusher pools which should be drilled as quickly as opened and would serve little or no purpose in non-gusher territory, which is no factor in over production.

The setting up of a minimum lease might involve an invasion of property rights unless based upon agreement. The moral effect of an unbiased set of conclusions based on a careful study of all factors and conditions involved, and given proper publicity, will go far toward effecting agreements.

Divided Royalty Ownership

This is becoming a nuisance to the industry. Royatlies on tracts of all sizes, in fractions rangnig from multiples of ⅛ and running into 1/3200 or more, are to be had, especially on tracts in gusher,

Steady Dependable Power

P U 51 25 H. P.
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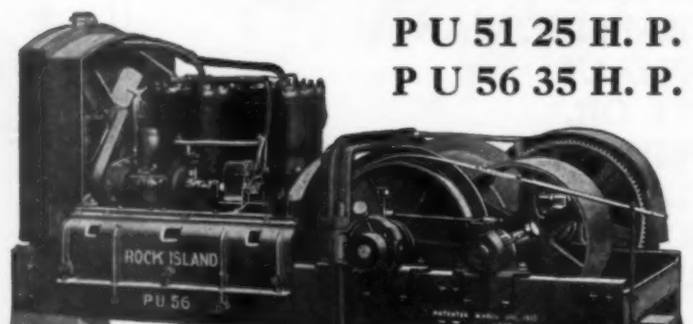

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Heavy duty, four cylinder Waukesha motor and friction transmission furnish a steady flow of dependable power for pumping, for pulling rods and tubing, or for handling a string of tools.

Complete control from well platform. Powerful service brake; alloy steel shafting; anti-friction bearings. Easy starting motor even in cold weather; all parts easily accessible; wearing parts adjustable. With or without radiator.

FREE BOOK—"Rock Island Oil Field Equipment"—ask for your copy. It describes pumping engines and tractor winches designed by practical oil field men.

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Tulsa, Oklahoma

or possible gusher, territory. These require special attention in the accounting department of an oil-purchasing company in order to properly pay for fractional royalties and rentals. In the case of obtaining new leases on such tracts, many complications arise from such fractional ownership. Such ownership is, for the most part, individual and, as a remedy, I suggest that the individuals be encouraged to pool their interests in (1) a corporation; and (2) such corporations be restricted to the minimum areal leasing unit and multiples thereof.

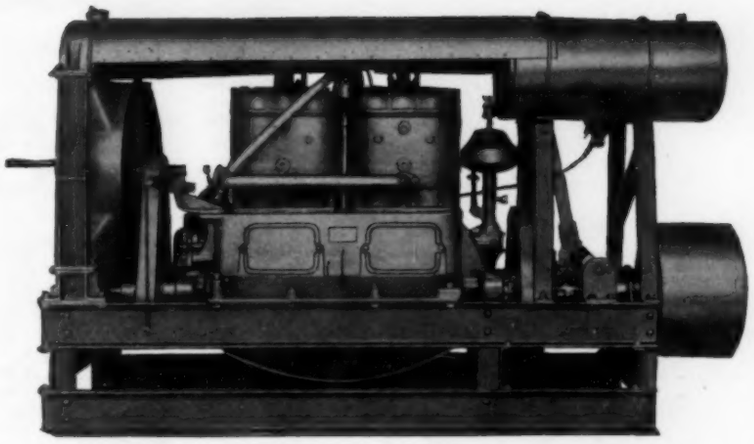
Gulf Has Promising Show In Hutchinson County Test

Amarillo, Texas. — Gulf Production Company's second wildcat test on the Dial-Perkins ranch in the south central part of Hutchinson County is reported swabbing at the rate of seven barrels of oil per hour from sandy-lime pay at 2890 feet. This well is located north of the Canadian river in the south half of section 2, H. & G. N. Ry. survey, block 1, and gives promise of becoming one of the best oil producers completed to date north of the river when completely drilled in. Gulf has a small pipe line extending from this area south to the Pan-Tex Pipe Line Company's trunk line. Gulf's Burnett 8, located on proven acreage in section 107 in the Burnett field in Carson County, is flowing about 500 barrels daily from broken pay in granite wash formation at 2874-76 feet and 2878-82 feet.

The Marland Oil Company of Texas has made locations for three additional tests to be drilled on its quarter section of leases on the Burnett ranch in Carson County. Marland's first well was completed early last April swabbing 850 barrels initial from broken pay at 3000-35 feet and 3060-80 feet, and swabbed an average of more than 600 barrels during May, with production now holding to 610 barrels.

The Whittington field in Wheeler County has two tests showing for oil producers, including the Texhoma Oil & Refining Company's first test on the J. H. Jackson 160-acre lease, southeast quarter of section 11, H. & G. N. Ry. survey, block 27, which is shut down for storage with 1800 feet of oil in the hole from granite wash pay at 2241-43 feet. This test passed through 25 million cubic feet of dry gas at 2174 and 2218 fet. Jim Whittington's Williams-Laycock 4, located in the northwest quarter of section 9 and less than half a mile west of the discovery well, is setting casing while spraying 15 barrels of oil daily from the top of pay at 2098 feet, with indications of being structurally high.

Don J. Butler, former sales manager of Butler Manufacturing Company, Kansas City, has severed his connections with that company and will be with R. B. Jones and Company, insurance dealers.



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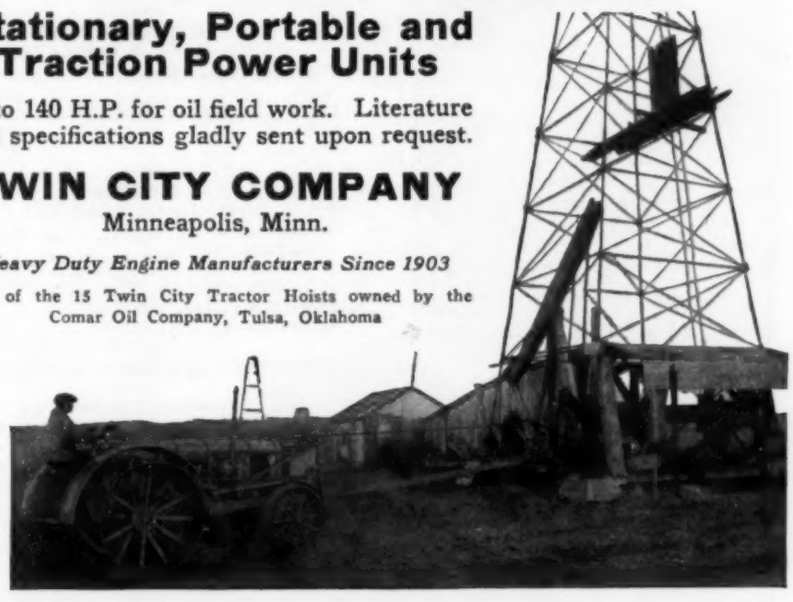

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CRUDE OIL PRICE QUOTATIONS

Crude Price Changes

June 6.—Effective at the opening of the market today, Joseph Seep Purchasing Agency posted advances ranging from 15 to 25 cents on eastern states crudes. New York Transit and Bradford district were advanced 25 cents; Gaines, 15 cents; Cabel, 15 cents; Somerset Light and Somerset Medium, 15 cents.

June 10.—Effective at the opening of the market today, the Joseph Seep Purchasing Agency posted a five-cent reduction in the price of Corning crude.

Current Postings

EASTERN STATES

	June 12 1925	June 12 1924
New York Transit	$3.90	$4.25
Bradford (Pa.)	3.90	4.25
Gains	3.45	...
Other Pa. Grades	3.75	3.75
Cabel	2.35	1.95
Ragland	1.30	1.10
Corning	2.05	2.15
Somerset, medium	2.45	2.05
Somerset, light	2.60	2.25

CENTRAL STATES

Illinois	$2.02	$2.07
Idniana	2.03	2.08
North Lima	2.23	2.28
South Lima	2.23	2.28
Plymouth	1.55	1.45
Princeton	2.02	2.07
Waterloo	1.10	1.55
Wooster	2.15	2.15

WESTERN KENTUCKY

Posted by Indian Refining Company for crude from Allen, Warren, Franklin, Davies, Barren, Cumberland and Monroe Counties

36 and above	2.05	...
33 to 35.9	1.95	...
32.9 and below	1.85	...

CALIFORNIA

(Crude oil prices at well)

Los Angeles and Orange Counties

14 to 19.9 gravity	$1.25	$1.00
20 to 20.9 gravity	1.27	1.01
21 to 21.9 gravity	1.30	1.02
22 to 22.9 gravity	1.33	1.03
23 to 23.9 gravity	1.36	1.05
24 to 24.9 gravity	1.40	1.07
25 to 25.9 gravity	1.44	1.10
26 to 26.9 gravity	1.48	1.13
27 to 27.9 gravity	1.52	1.16
28 to 28.9 gravity	1.56	1.19
29 to 29.9 gravity	1.60	1.22
30 to 30.9 gravity	1.64	1.25
31 to 31.9 gravity	1.68	1.28
32 to 32.9 gravity	1.72	1.31
33 to 33.9 gravity	1.76	1.34
34 to 34.9 gravity	1.80	1.37
35 gravity and above	1.85	1.40
Fuel Oil	1.65	1.40

Rosecrans Field

36 to 36.9 gravity	$1.92	
37 to 37.9 gravity	2.00	
38 to 38.9 gravity	2.08	
39 to 39.9 gravity	2.16	
40 to 40.9 gravity	2.24	
41 to 41.9 gravity	2.32	
42 and above	2.40	

MID-CONTINENT

(Prairie Prices)

Below 30 gravity	1.35	$ ...
30 to 32.9 gravity	1.55	...
33 to 35.9 gravity	1.80	...
36 to 38.9 gravity	2.00	...
39 to 41.9 gravity	2.25	...
42 and above	2.35	...

	June 12 1925	June 12 1924

(Sinclair Prices)

Below 30 gravity	1.35	...
30 to 32.9 gravity	1.55	...
33 to 35.9 gravity	1.80	...
36 to 38.9 gravity	1.95	...
39 to 41.5 gravity	2.25	...
41.6 and above	2.35	...

(Texas Company Prices)

Below 30 gravity	1.35	...
30 to 32.9 gravity	1.55	...
33 to 35.9 gravity	1.80	...
36 to 38.9 gravity	2.00	...
39 to 41.5 gravity	2.25	...
42 and above	2.35	...

(Magnolia Petroleum Co.)

Under 28 gravity	1.00	...
28 to 30.9 gravity	1.35	...
31 to 32.9 gravity	1.55	...
33 to 35.9 gravity	1.80	...
36 to 38.9 gravity	2.00	...
39 to 41.9 gravity	2.25	...
42 and above	2.35	...
Corsicana, light	2.00	...
Corsicana, heavy	1.00	...
Mexia	2.00	...
Thrall	1.00	...
Wortham	2.00	...

NORTH CENTRAL TEXAS

(Humble Oil & Refining Co.)

Corsicana, light (Powell)	2.00	2.00
Mexia	2.00	2.00
Currie	2.00	2.25
Richland	2.00	...
Wortham	2.00	...

RANGER

(Humble Oil & Ref. Co.)

30 and below	$1.35	...
30 to 32.9	1.55	...
33 to 35.9	1.80	...
36 to 38.9	2.00	...
39 to 41.9	2.25	...
42 and above	2.35	...

WICHITA AND ARCHER COUNTIES (Texas)

(Humble Oil & Ref. Co.)

30 and below	1.35	...
30 to 32.9	1.55	...
33 to 35.9	1.80	...
36 to 38.9	2.00	...
39 to 41.9	2.25	...
42 and above	2.35	...

Moran Crude

30 and below	1.35	...
30 to 32.9	1.55	...
33 to 35.9	1.80	...
36 and above	2.00	...
Lytton Springs (Lockhart)	2.00	...

SOUTH TEXAS

Mirando (Texpata)	1.00	.80
Mirando (Magnolia)	1.00	...

SOMERSET

(Grayburg Pipe Line Company)

30 and below	1.35	...
30 to 32.9	1.55	...
33 to 35.9	1.80	...
36 to 38.9	2.00	...
39 to 41.9	2.25	...
42 and above	2.35	...

GULF COAST

Grade "A"	1.75	2.00
Grade "B" at Blue Ridge, Hull and Pierce Junction	1.50	1.70

Big Lake (Reagan County)

36 to 38.9	$2.00	...
39 and above	2.25	...

LULING

Based on Contract	1.15	...
Lockhart	2.00	...

	June 12 1925	June 12 1924

LOUISIANA-ARKANSAS

Caddo

38 gravity and above	2.05	...
35 to 37.9 gravity	1.95	...
32 to 34.9 gravity	1.85	...
Below 32 gravity	1.70	...

Homer

35 gravity and above	1.80	...
33 to 34.9 gravity	1.70	...
31 to 32.9 gravity	1.60	...
Below 31 gravity	1.45	...

COTTON VALLEY

All grades	1.00	...

Haynesville

33 gravity and above	1.70	...
Below 33 gravity	1.60	...

Bull Bayou

38 gravity and above	1.85	1.80
35 gravity to 37.9	1.70	1.65
32 to 34.9 gravity	1.55	1.50
De Soto crude	1.90	1.85
Crichton	1.70	1.65
Bellevue	1.75	1.75
Jennings	1.75	2.00
Vinton	1.75	2.00
Edgerly crude	1.75	1.80

Smackover

Louisiana, Atlantic, Shreveport-Eldorado

28 and above	1.35	...
27 to 27.9	1.30	...
26 to 26.9	1.25	...
25 to 25.9	1.20	...
24 to 24.9	1.10	...
Below 24	.80	...

The Texas Company

26 gravity and above	1.30	...
24 to 25.9	1.00	...
Below 24	.80	...

Standard Gulf

27 and above	1.30	...
26 to 26.9	1.25	...
25 to 25.9	1.20	...
24 to 24.9	1.10	...
Below 24	.80	...

El Dorado

33 gravity and above	1.70	...
Below 33 gravity	1.60	...
East Field (Calion)	.80	...

Stephens District

26 gravity and above	1.60	...
Below 26 gravity	1.40	...

WYOMING-MONTANA

Wyoming

Byron	2.10	...
Ferris	1.30	...
Elk Basin	2.15	1.95
Grass Creek	2.15	1.95
Rock Creek	2.00	1.70
Lost Soldier	1.28	...
Lance Creek	2.15	1.90
Mule Creek	1.50	1.10
Notches	.65	...
Big Muddy	2.00	1.50
Salt Creek	2.00	1.60
Osage	2.15	1.90
Hamilton Dome	2.00	1.55
Pilot Butte	1.35	1.25
Torchlight-Greybull	2.00	1.90
Lander	.70	.70

Montana

Sunburst	1.40	1.05
Cat Creek	2.15	1.95

NEW MEXICO

Hogback	2.20	...

CANADIAN CRUDE

Oil Springs	2.70	2.73
Petrolia	2.63	2.68

*Bounty on Canadian crude is ¾ cents per gallon, or 26¼ cents per barrel.

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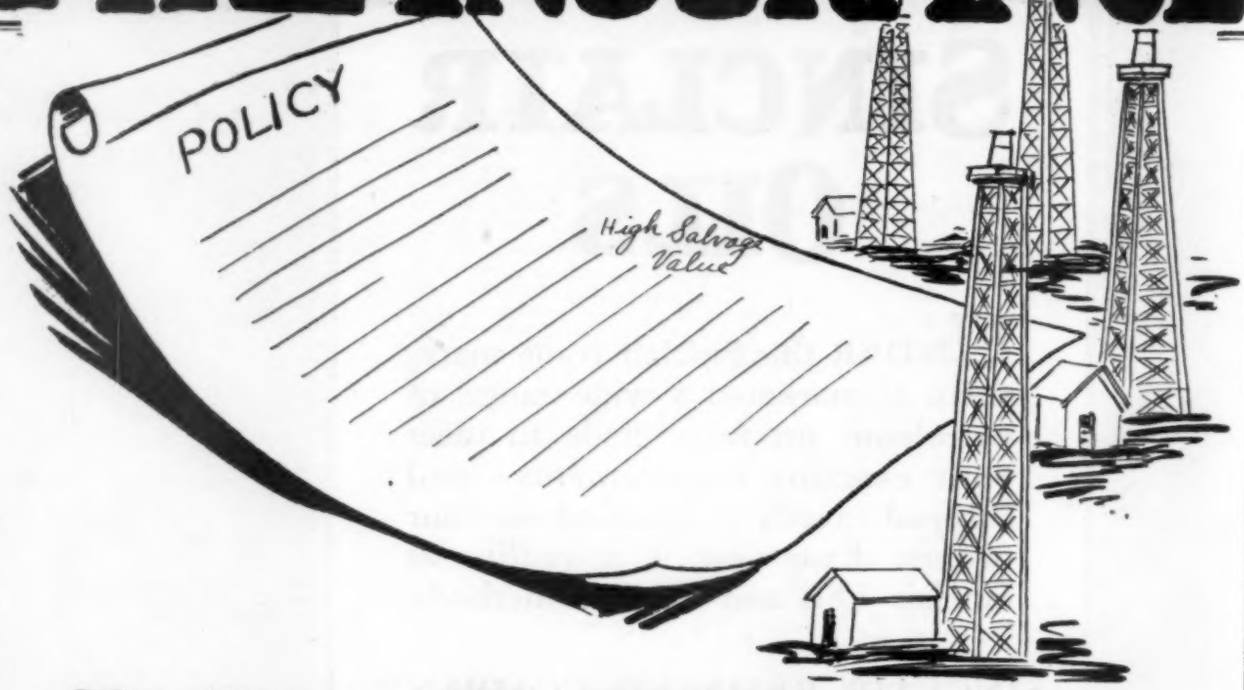

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Pumping Unit and Hoist

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If you are interested in this new method of pumping wells, write for complete information and price.

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806 Carter Bldg.

Lufkin, Texas

LOS ANGELES
506 Com. Exch. Bldg.
TULSA
317 Roberts Bldg.

Say you saw it in The Oil Weekly

AVERAGE DAILY PRODUCTION FOR U.S.

Mountain States

A rather sharp decrease was noted during the past week in total pipe line runs from all fields in the Rocky Mountain states. Salt Creek led the fields in the decline. Runs for the past and previous weeks follows:

WYOMING

	Past Week	Prev. Week
Salt Creek	53,950	55,290
Grass Creek	4,415	4,610
Lost Soldier	4,215	5,160
Big Muddy	3,370	3,390
Rock Creek	3,200	3 140
Teapot	1,525	1,875
Poison Spider	1,060	825
Elk Basin	900	945
Mule Creek	780	1,125
Hamilton Dome	625	730
Lance Creek	475	500
Osage	400	415
Lander	260	380
Ferris	160	150
Greybull	110	130
Totals	75,445	78,665

COLORADO

Fort Collins	985	1,010
Craig	700	715
Florence	240	250
Tow Creek	110	125
Rangely	100	105
Boulder	30	25
Totals	2,165	2,230

MONTANA

Cat Creek	3,625	3,540
Kevin-Sunburst	6 145	6,335
Totals	9,770	9,875

NEW MEXICO

Artesia	1,075	1,000
Hogback	535	501
Rattlesnake	150	165
Totals	1,760	1,675
Miscellaneous	200	200
Grand Totals	89,340	92,645

Kansas

Greenwood	28,500	27,380
Rainbow Bend	21,100	20,980
Eldorado	14,100	14,150
Elbing and Peabody	5 645	5,650
Augusta and Douglas	3,155	3,170
Fox-Bush	2,945	2,955
Blankenship	2,360	2,365
Florence and Covert	1,990	2,000
Other fields	21,100	20,990
Totals	100,895	99,640

California

Los Angeles, Calif., June 6—Daily average production of the California fields the past week, compared with the previous week, with number of producing wells in several fields, was about as follows:

	Past Week	No. Prod. Wells	Prev. Week
Long Beach	107,000	520	110,000
Santa Fe Springs	53,000	345	54,000
Inglewood	45,000	52	30,000
Huntington Beach	43,000	301	43,500
Torrance	38,000	544	39,000
Dominguez	34 500	54	35,500
Rosecrans	24,000	49	24,000
Others	288,000		288,000
Totals	632,500		624,000

Oklahoma

Fields—	Past Week	Prev. Week
Tonkawa	63,480	60,825
Burbank	58,790	57,930
Bristow	45 100	44,600
Cromwell	38,110	40,375
Osage (outside Burbank)	35,980	36,860
Gilcrease-Papoose	22,365	22,500
Okmulgee	25,200	25,265
Cushing	21,200	21,300
Hewitt	14,890	14,975
Wewoka	18,550	14,460
Garber	10,860	10,190
Otoe	7 915	6,000
Stroud	4,890	3,105
Braman	4,080	4,300
Other fields	83,100	84,620
Totals	454,510	447,305

Louisiana

Haynesville	13,225	13,320
Cotton Valley	11,200	11 270
Vinton	8,340	10,200
Caddo Light	8,750	9,425
Homer	6,700	6,900
Bull Bayou	4,100	4,145
Bellevue	3,625	3,700
Caddo Heavy	2,250	2,310
Evangeline	975	850
Elm Grove	755	765
Edgerly	515	600
Lockport (Lake Charles)	175	175
Anse La Butte	15	25
Totals	60,625	63 685

Arkansas

Smackover Heavy	393,525	424,285
Smackover Light	31,050	29,850
El Dorado	8,410	8,525
Stephens	1,850	1,860
Irma	1,375	1 480
Totals	436,910	466,000

Texas

NORTH-CENTRAL

	Past Week	Prev. Week
Corsicana-Powell	49,595	47 865
Wortham	41,750	43,700
Archer County	37,890	37,615
Big Lake-Reagan County	30,700	29,870
Stephens County	22 215	20,825
Mexia	20,275	20,350
Electra	17,190	17,170
Burkburnett	15,150	14 830
Young County	10,695	10,760
Eastland County	10,255	10,795
South Vernon-Wilbarger Co.	9,225	8,215
Richland	4,750	4,825
K-M-A and Iowa Park	4,340	4,440
Callahan County	3,870	3,865
Moran-Shackelford County	3,540	3 655
Panhandle District	3,170	3,410
Brown County	2,375	2,095
Mitchell County	1,975	2,140
Currie	1,400	1,425
Palo Pinto County	590	595
Petrolia-Clay County	440	445
Montague County	160	150
Throckmorton County	70	65
Coleman County	100	75
Scurry County	75	25
Thrall-Williamson County	55	40
Jack County	20	20
Totals	291,870	289,265

GULF COAST

Hull	21,500	22,200
South Liberty	21,385	13,050
Orange	13,800	13,050
West Columbia	11,600	11,825
Goose Creek	11,200	9,775
Humble	5,125	6,000
Sour Lake	4,425	4,500
Blue Ridge	1,200	2,650
Saratoga	1,600	1,675
Batson	1,500	1,525
Damon Mound	1,140	1,200
Spindle Top	1,150	1,150
High Island	1,075	625
Pierce Junction	510	575
Big Creek	525	500
Barbers Hill	125	140
Markham	220	75
Nacogdoches	30	30
Totals	98,110	100,545
Luling	27,000	27,330
Mirando	10,500	10,700
Lockhart (Lytton Springs)	11,150	11,465
Somerset	2,900	2,740
Miscellaneous South Texas	710	620
Totals	52,260	52,845
Total Texas	442,240	442,655

Condensed U. S. Production for Twelve Months

(Stated in Barrels)

This table is compiled each week by The OIL WEEKLY, and shows daily production average for each state or section.

Daily average for month	*Mid-Continent	North Central Texas	Texas Coastal	Texas Total	Kansas	Okla.	Louisiana	Eastern States	Wyo. Mont. Colo. New Mexico	Calif.	Ark.	Total
March	762,684	284,874	78,567	388,221	69,864	407,946	55,783	97,800	128,352	650,790	119,869	1,917,023
April	777,590	276,595	76,755	380,005	71,015	429,980	54,740	101,250	127,700	649,825	128,750	1,943,270
May	763,320	267,475	74,175	374,915	71,490	424,355	60,655	103,800	127,770	640,930	148,630	1,952,545
June	799,230	260,785	74,335	375,310	74,265	464,175	62,660	105,750	125,735	628,400	157,165	1,993,465
July	815,830	254,665	75,445	378,365	81,545	479,620	63,855	107,175	124,305	620,175	148,655	2,003,695
August	861,640	254,520	75,700	377,045	85,765	521,355	62,595	107,000	123,895	619,200	142,740	2,037,890
September	886,650	253,243	76,953	366,197	86,758	546,647	62,162	107,622	117,345	611,500	131,343	2,029,580
October	855,823	247,222	75,713	359,861	86,884	521,717	62,493	106,600	107,270	605,060	123,235	1,972,902
November	851,733	248,467	71,648	369.621	86,031	517,237	66,117	106,375	91,205	594,000	119,893	1,950,478
December	873,344	267,065	65,437	385,410	88,065	518,213	59,602	106,875	83,472	606,875	111,402	1,959,917
January	906,160	334,305	65,065	448,900	88,390	483,465	56,520	106,200	78,435	602,600	106,280	1,970,350
February	861,130	292,796	63,885	405,195	88,790	479,545	56,825	105,125	87,710	598,375	106,085	1,927,680
March	839,200	301,795	83,800	434,410	84,965	452,440	58,030	100,550	90,900	605,775	112,425	1,939,520
April	836,110	294,040	94,215	435,035	84,360	457,710	57,700	98,250	91,845	602,800	209,840	2,037,545
May	835,350	295,695	100,205	447,080	93,610	446,040	60,945	101,140	91,492	609,200	419,770	2,269,280
June 6	847,275	291,870	98,110	442,240	100,895	454,510	60,625	103,400	89,340	632,500	436,910	2,320,420

*Includes North Central Texas, Kansas, Oklahoma.
NOTE—Wortham, Corsicana-Powell and Mexia production included in North Central Texas.

COMPLETIONS FOR PAST WEEK IN U.S. FIELDS

Texas

COASTAL COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
Spindle Top		
Wonder Oil Co.'s No. 3 Weed Hebert	*	870
Saratoga—		
Gulf Prod. Co.'s No. 1 Porch Wells et al Fee "B"	280	3100
Paggi Brothers' No. 3 Honk	10	1010
Goose Creek—		
Gulf Prod. Co.'s No. 33 Stateland Oil Co.	200	2760
No. 9 Chapman-Bryan	150	4360
Hull—		
Mecom Oil Co.'s No. 8 Taylor	3000	4165
Yount Lee Oil Co.'s No. 11 Merchant	1200	4120
No. 12 Merchant	150	2720
Gulf Prod. Co.'s No. 10 Phoenix Dev. Co., (wo)	190	2525
South Liberty—		
Gulf Prod. Co.'s No. 4 A. Williams et al	*	3785
No. 8 O. A. Schade Fee	600	3390
No. 2 J. F. Richardson et al	250	3525
No. 3 John Hamman	500	3550
Humble Oil & Ref. Co.'s No. 4 Pickett "C"	150	3570
No. 5 Schade	1000	3480
No. 5 Chambers "A"	800	3485
Bashara Oil Co.'s No. 3 Pickett	600	3565
No. 4 Pickett	500	3585
No. 5 Pickett	200	3540
Navarro Oil Co.'s No. 10 Harrison	200	3460
J. S. Abercrombie & Co.'s No. 2 Harrison	30	3595
No. 4 Harrison	500	3340
Pierce Junction—		
H. R. Cullen's No. 7 Howe	45	3945
Gulf Prod. Co.'s No. 2 Cain, wo	*	4130
Big Creek—		
Union Sulphur Company's No. 20 Davis	*	870
No. 21 Davis	*	670
Orange—		
Continental Oil Co.'s No. 12, Chesson, wo	550	3160
Monarch Oil and Ref. Co.'s No. 5 Gallier, wo	*	3315

ARCHER COUNTY

Company, Well and Location	Initial Production Bbls.	Depth
L. T. Burns et al S. M. Cowan-Turbeville 1	*	1502
Camp Oil & Gas Co. H. Wilmont 7	*	1635
County Line Oil Co. Stampfli 6	20	1377
Fred B. Foster & Co. Andrews 1	*	3605
Gulf Prod. Co. T. L. Griffin 9-A	*	1350
Davis-Hart Oil Co. Roach-Junker 10	140	1234
Humble Oil & Ref Co. M. Brom 1	45	1390
Dr. G. B. Hamilton 1	80	1333
Magnolia Pet Co. J. F Rogers 2	40	1335
Vic Stampfli 9	50	1369
W M. Moore et al Rogers 3	80	1281
Morrisey Drilling Co. J. H. White 1	*	1807
Murchison-Fain et al Echols 10	80	1339
H. Harmel 11-A	25	1285
Norday Oil Co. J. P. Meade et al 1	*	1429
O'Donohoe & Gates J J Perkins 1.	*	1810
Panhandle Ref Co. Rogers 3	50	1326
Prairie Oil & Gas Co. Richardson-Mayfield 19	35	1281
Phillips Pet. Co. J. H. White 65	35	1604
Ramming-Saunders et al L. F. Wilson 6	40	1603
Riner-Bailey et al L. F. Wilson 19-B	90	1620
Sheldon et al Walsh 1	*	1385
Texhoma Oil & Ref. Co. L. F. Wilson 6-E	45	1592
The Texas Co. Phillips 1	*	1238
Hausler 1-B	*	1146
Goldsmith 3	20	1333
White Bros. et al Kunkel 11	15	1250
Woodburn Oil Corp. (Simms) L. F. Wilson 18-A	55	1592

BURKBURNETT

Company, Well and Location	Initial Production Bbls.	Depth
T. F. Hunter et al Cooper 1	*	1350

ELECTRA

Company, Well and Location	Initial Production Bbls.	Depth
Gulf Prod. Co. Forbes-Burnett 16	*	1970
Empire Gas & Fuel Co. Pierce Fee 11	50	1465
Maer-Staniforth et al Waggoner Bros. 1	*	2010
Magnolia Pet. Co. Burnett Ranch 11	15	1789
W. R. Piper 44	25	1776
W. M. Moore et al Burnett 5	50	1595
Texhoma Oil & Ref. Co. Waggoner Bros. 1-A	25	1745

K-M-A AND IOWA PARK

Company, Well and Location	Initial Production Bbls.	Depth
Atlantic Oil Prod. Co. T. F. Mithcell 1	*	1875
Roy I. Carter et al K. & K. 1-C	*	1850
Maer-Staniforth et al Allen-Kemp 2	250	1642
O'Donohoe-Gates et al Allen-Kemp 2-B	125	1637
Petroleum Prod Co. Allen-Kemp 3-B	165	1645
T. O. Shappell Oil Co. K. & K. 1-F	*	1813
The Texas Co. Allen-Kemp 5-C	110	1641
Underwood Drilling Co. et al Pace 2	*	1910
White Eagle Oil & Ref. Co. Hooks 1	175	1781

SOUTH VERNON

Company, Well and Location	Initial Production Bbls.	Depth
Humble Oil & Ref. Co. Stephens 23	35	1341
W. M. Priddy et al Castlebury 6	50	1323

SHACKELFORD COUNTY

Company, Well and Location	Initial Production Bbls.	Depth
Hope Pet. Co. Reynolds 2, dd	50	1061
Landreth Prod. Corp. Kendrick 2	*	1008
Loggie & Best et al Black Bros. 2	*	840
McKamra et al Clausdell 1	25	541
Knight et al Moberley 2	35	1035
Tannehill et al Moberley 12	*	1002

EASTLAND COUNTY

Company, Well and Location	Initial Production Bbls.	Depth
Carter-Woods et al Langford 5	¶2	1935
Reclamation Oil Co. Bond 6	15	3670
Westheimer et al Hamilton 9	*	3638

STEPHENS COUNTY

Company, Well and Location	Initial Production Bbls.	Depth
Buckeye Pipe & Supply Co. Pisgah Church Lot 1	¶2½-5	3307
Barney Carter-Thompson et al Langford 3	4800	3556
McLester Oil Co. et al Pritchard 1	3250	3545
Edson et al Crowley 2	40	1875
Prairie Oil & Gas Co. M. C. Bruce 4	¶3-200	2105
Simms Oil Co. Decker 5	5	2197

YOUNG COUNTY

Company, Well and Location	Initial Production Bbls.	Depth
Brian et al Vernon 1	*	1262
Burton et al Hankins 1	*	1208
Consolidated Oil Co. Bullock 1	*	1515
Dunagan 1	*	1107
F-H-E Oil Co. Dunagan 2	70	1027
Goldsmith et al Bishop 1	*	1069
D. L. Holder et al Johnson 1	*	1020
Mahlstedt-Mook Oil Co. Logan 1	*	1402
Murchison-Fain & Litchfield Campbell 3-D	35	991
Murchison-Fain et al J. H. Wilson 1	40	1085
J. H. Wilson 2	10	1118
Gray 1	*	1253
Panhandle Ref. Co. Gambrell 7	*	1325
Simms Oil Co. W. B. Cheeves 1	200	1022
J. D. Carpenter 2-A	40	1030
D. L. Wolf et al Teague 1	*	1105

TEXAS MISCELLANEOUS

Company, Well and Location	Initial Production Bbls.	Depth
Luling—		
United North & South Oil Co.'s No. 22 Tabor	200	....

Arkansas

Company, Well and Location	Initial Production Bbls.	Depth
El Dorado East Field—		
Grimes & Jones' Van Hook 4, 7-18-14	25	2207
Stephens Field—		
Transcontinental Oil Co.'s McClurkin 1, 6-16-19, Columbia County	8	2182
Lima Field, Nevada County—		
Zingg et al's Womack 2, 10-14-21	100	1240
Smackover Field Ouachita County—		
Arkansas Fuel Oil Co.'s Snyder 7, 34-15-15	6000	2371
Snyder 8, 34-15-15	10,000	2374
Houston Oil Co.'s Hinton 6, 5-16-15	100	2384
Humble Oil & Ref. Co.'s Flenniken 8, 6-16-15	2000	2384
Umstead 11, 5-16-15	2000	2378
Hunt et al's Haltom D-1, 21-15-17	*	2650
W. B. Keeves et al's Neely 1, 27-15-16	50	2006
Louisiana Oil Ref. Corp.'s Myatt 3, 22-15-17	25	2336
Tyson 1, 27-15-17	45	2298
Marine Oil Co.'s Snyder 5, 34-15-15	5000	2368
Hayes 6, 4-16-15	*	2359
Umstead 8, 5-16-15	2000	2379
J. D. Reynolds et al's Berg 3, 27-15-17	40	2372
Standard Oil Co.'s Goodwin B-5, 5-16-15	3000	2386
Goodwin B-8, 5-16-15	8000	2379
Murphy B-7, 29-14-15	*	2015
Umstead 18, 32-15-15	3000	2383
Sure Oil Corp.'s Snyder 2, 34-15-15	3000	2355
The Texas Co.'s Neeley 3, 27-15-16	40	2072
Texas Pacific Coal & Oil Co.'s Laney 1, 31-15-15	500	x2579
Unity Pet. Co.'s Berry 5, 33-15-15	8000	2389
Berry 7, 33-15-15	2000	2383
Wingfield et al's Fee 1, 5-16-15	3500	2378

x Blossom sand discovery well.

Company, Well and Location	Initial Production Bbls.	Depth
Smackover Field, Union County—		
Amerada Petroleum Corp.'s Lyall 5, 3-16-15	1000	2385
Lyall 7, 3-16-15	4500	2364
J. W. Clark's Cook 6, 17-16-15	2000	2524
Palmer 1, 9-16-15	400	2472
Crawford & Sebastian's James 6, 6-16-15	300	2391
Federal Pet. Co.'s Lawton B-4, 10-16-15	400	2429
Gulf Refining Co.'s H. Murphy 17, 3-16-15	400	2367
T. C. Murphy 13, 9-16-15	500	2392
G. E. Murphy 5, 8-16-15	2500	2431
Flenniken 10, 5-16-15	450	2371
S. Murphy 23, 4-16-15	6000	2371
H. Murphy 24, 4-16-15	2500	2387
Higgins Oil & Fuel Co.'s McGraw 1, 6-16-16	30	2286
Houston Oil Co.'s Milner 6, 3-16-15	250	2393
Imperial Oil & Gas Co.'s Murphy 5, 9-16-15	500	2443
E. M. Jones' Cook 2, 16-16-15	50	2488
Magnolia Pet. Co.'s Scott 1, 12-16-17	40	2313
O. G. Murphy's T. C. Murphy 6, 9-16-15	2000	2427
Natural Gas & Pet. Co.'s Murphy B-3, 17-16-15	3000	2537
Ohio Oil Co.'s Pate 10, 10-16-15	500	2385
Roxana Pet. Co.'s Flenniken B-1, 5-16-15	1500	2372
Ray Drilling Co.'s Tatum 3, 7-16-15	*	2426
Simms Oil Co.'s Cook 6, 16-16-15	200	2448
Standard Oil Co.'s Alphin 22, 2-16-15	*	2220
McClanahan 12, 6-16-15	200	2408
Sun Co.'s Hays 9, 3-16-15	2000	2366
Hays 10, 3-16-15	5000	2367
The Texas Co.'s Alphin 8, 3-16-15	2000	2368
Graves 10, 3-16-15	1800	2367
Wetherbee et al's McGraw 1, 7-16-15	30	2320
Total, 53 wells	98,350	

Mountain States

WYOMING

Company, Well and Location	Initial Production Bbls.	Depth
Salt Creek Field—		
Wyoming Associated Oil Corp.'s No. 18-A SW¼ 24-40-79	50	1444
No. 6-A NE¼ 26-40-79	60	1457

Company, Well and Location	Initial Production Bbls.	Depth
No. 24-A, NE¼ 34-40-79	50	1668
No. 18-A, SE¼ 14-40-79	50	1840
No. 31-A, SE¼ 14-40-79	50	1640
Mountain & Gulf Oil Co.'s No. 24-A, NE¼ 6-39-78	60	2320
Wyoming Oil Fields Co.'s No. 15-A, NW¼ 25-40-79	75	1555
Midwest Oil Co.'s No. 16-A, NW¼ 25-40-79	50	1506
No. 11-A, SE¼ 14-40-79	50	1782

MONTANA

Kevin-Sunburst Field—

Johnson Syndicate's No. 5, NW¼ 4-34-2	500	1490
Ferdig et al No. 5, 29-35-1	110	1450
Homestake Oil Co.'s No. 5, NE¼ 21-35-2	40	1560
Tri-State Oil Co.'s No. 2, NW¼ 30-35-1	25	1551
Big West Oil Co.'s No. 8, SE¼ 31-35-1	125	1435
Regina Oil Co.'s No. 1, SE¼ 33-35-2	¶	1516

COLORADO

Lafayette Structure—

Ohio Oil Co.'s No. 1, 22-1-69	*	5240

NEW MEXICO

Artesia Field—

Illinois Producers Co.'s No. 11, 29-18-28	200	....
No. 14, 28-18-28	900	2051
Maljamar Oil & Gas Co.'s No. 2, 28-18-28	800	2026

Bloomfield Mesa—

Coal Creek Oil & Gas Co.'s No. 1, 20-29-11	55	....

California

Long Beach—

Alva N. Kaine's Flower State 1	80	4865
Industrial Synd.'s 2 Burnstein 3	65	5010
L. Herwick's No. 3	275	4739
South Slope's O'Donnell 39	800	4454

Rosecrans—

Marine's No. 33	900	5002
Union's Chandler 2	500	3891
Paul Getty's No. 1, wo	1790	4445
Geo. F. Getty's Athens 4	1400	4445
W. H. Fisher's No. 8	900	5002
E. J. Miley's No. 5	3000	5240

Torrance—

Standard's Joughin 7, wo	100	3820
Petroleum Securities' Kleinmeyer A-9	20	3815
General Petroleum's Poggi 4	65	3817
Geo. F. Getty's Tweeddale 23, wo	40	3400
C. C. M. Oil Co.'s Torrance 84	50	3690
Selby Root's Torrance 11	50	3798
Shell Co.'s Frenger 3	20	3575

Inglewood—

Associated's Vickers 3	1370	2582
Vickers 10	1430	2561
Petroleum Securities' Dabney-Lloyd 3	200	2212
Cone 7	1400	2560
Dabney Lloyd 2	620	2171
Rubel 3	2700	2510
Rubel 4	1700	2507
Standard's L. A. Inv. 2-4	150	2050
Vickers 2-4	800	2700
Petroleum Midway's Twin 1	320	2585

Midway District—

Midlands Oilfields' No. 1, sec 24-31-23	200	4148

Sunset District—

General Petroleum's No. 375, sec 35	50	2325

McKittrick—

Q & S Oil Co.'s No. 1 sec 28-30-22	*	4425

South Kern River—

Marland's No. 12, sec 16-28-27	150	2630

Oklahoma

Kay County—

Marland Oil Co.'s No. 1 Nelson, C SW NE NE 9-25-2w	*	2300
No. 2 McFarland, C SW SW SE 16-25-2w	*	2395
Magnolia Pet. Co.'s No. 1 School Land, C NW NE NW 13-26-2w	*	3902
Comar Oil Co.'s No. 23W Beverlin, C NE NW NW 34-25-1w	1115	4192
Harold Pet. & Ark. Nat'l Gas' No. 1 Kelly, SWc SE	¶	3437
Marland Oil Co.'s No. 4 Hubbard, SEc NE NW 12-26-2w	318	2541

Creek County—

Wolverine Oil Co.'s No. 6 Clark, SEc NW SW 22-15-10	2745	2736
Billingslea Oil Co.'s No. 4 Jones, NWc NE NE 28-14-10	*	3131
Prairie O. & G. Co.'s No. 2 Hatcher, NEc NW NW 20-14-10	*	3430
C. F. Noble's No. 3 Stewart, C NW NE NW 20-14-10	*	3430
Prairie O. & G. Co.'s No. 1 Hatcher C NW NW NW 20-14-10	*	3422
Prairie O. & G. Co.'s No. 9 Rentie, NEc SE SW 2-14-8	40	2516
Bu-Vi-Bar Pet. Co.'s No. 1 Fellows, C NW SE 5-17-8	*	3295
Southwestern Pet. Co.'s No. 1 Harjo, Sec 18-14-10	¶	2904
Peter Oil Co.'s No. 2 Abrams, SWc NW SE 4-14-10	50	3205
Eastern Oil Co.'s No. 8 Roberts, NWc SW SE 17-15-8	100	3820
Skelly Oil Co.'s No. 5 McKane, SWc SW SW 12-14-8	100	2458
L. Wallace's No. 1 Layton, SWc NW NE NE 3-17-11	¶	1966
Smith et al's No. 1 Ireland, SEc NE 4-17-11	¶	1305
Emery & Son's No. 5 Jacob, SWc NW NE 21-16-9	30	2956
Foster et al's No. 1 Waggoner, SEc NW NW 17-16-12	10	1532
Tibbins O. & Go. Co.'s No. 9, SWc NE SW 30-15-9	75	3039
No. 11, C E L NE SW 30-15-9	1150	3018
Gled Oil Co.'s No. 1 Miller, SEc NE NE 14-19-8	30	3163
Sartain Bros. No. 1 Artussie, SEc SW NW 32-17-8 (owd)	420	3533
Olean Pet. Co.'s No. 3 Washington, C SW NW SW 32-17-8	300	3494
Billingsley & Skelly's No. 4 Foster, SEc SW 30-15-9	75	3052

Pawnee County—

Magnolia Pet. Co.'s No. 1 Diamond, SEc NE NW 5-22-3	*	4620
No. 5 Robodeaux, C SW SE SE 32-23-3	*	3580
No. 4 Schooland, NEc SW SE 16-20-6	30	3085
Sun Ray Oil Co.'s No. 4 Canfield, NEc SE SE 17-20-7	50	2852
Watchorn O. & G. Co.'s No. 8 Miller, C SE SW SW 33-23-3	630	4123
No. 10 Miller, SWc NE NE SW 33-23-3	142	4065
Donahoe & Carter's No. 2 Zoldoski, NEc NW SE 22-23-4	312	3720
Comar Oil Co.'s No. 1 Zoldoski, NWc SE SE 22-23-4	64	3729
Amerada Pet. Co.'s No. 1 Zoldoski, NWc SW SE 22-23-4	240	3726
Dempsey et al's No. 2 Lesher, NEc NW NE 21-20-6	45	3095
Superior Oil Co.'s No. 1 Chisman, NEc SW NE 25-20-3	18	2541

Garfield County—

Healdton O. & G. Co.'s No. 1 Doak, C NE NE NW 26-22-3w	†	....
Sinclair O. & G. Co.'s No. 17 Walker, C SE NE NE 13-22-4w	490	2350
No. 18 Walker, C SE NE NE 13-22-4w	30	1427
Roxana Pet. Co.'s No. 6 Schroeder, NW SW SW 19-22-3w (owd)	620	2306

Seminole County—

Cosden O. & G. Co.'s No. 1 Roberts, C SE SE NE 32-11-8	*	3473
Carter Oil Co.'s No. 4 Hill, C SW NW NE 9-10-8	*	4219
W. R. Ramsey's No. 1 Stokes, C SE SW SW 31-8-8	*	3210
Southwestern Pet. Co.'s No. 2 Little, C SW NW SE 3-10-8	120	3434
Gypsy & Laurel's No. 1 Williams, C SE NE NE NW 5-10-8	588	3484
Dixie Oil Co.'s No. 5 Foster, C SW SE SW 28-8-8	50	4001
Magnolia Pet. Co.'s No. 1 Walker, C SE NE NE SW 29-8-8	80	3475
P. & R. Co.'s No. 5 Amos, C NE SW SE 31-8-8	600	3243
Dixie Oil Co.'s No. 1 Knight, C NE NE NE 6-7-8 (owd)	2132	3219
Homa Okla's No. 1 Carolina, C SW NE NE 6-7-8	80	3226
Champlin Bass et al's No. 1 Skinner, C NW NE NE 6-7-8	780	3223
Carter & Pulaski's No. 1 Baker, C SE NW 33-11-8	520	3393

Hughes County—

J. W. McCullough's No. 1 Jefferson, C NW NE SW 35-8-8	*	3210
Minnehoma Oil Co.'s No. 1 Cain, C SW NW NE 1-9-9	¶	3415
Cosden O. & G. Co.'s No. 13-W, Alexander, C S½ N½ NW 3-9-9	500	3329
W. R. Ramsey & Dempsey's No. 1 Bowlegs, C NW SW SW 23-9-9	230	3421
Magnolia Pet. Co.'s No. 4 Byrd, C SE SE SE 4-9-11	104	2942
Tidal-Osage's No. 4 Baker, C NW SW SE 4-9-11	50	2985
No. 1 Harjo, C SE SE NE 4-9-11	333	2926
Mid-Kansas O. & G. Co.'s No. 1 Trapp, C NW NE SE 9-9-11	10	2933

Okfuskee County—

Waite Phillip's No. 1 Barnett, SEc NE NW 23-11-10	*	4126
Deaner et al's No. 2 Jacobs, SW SE 15-11-11 (owd)	*	2775
Vincent et al's No. 1 Thomas, NWc SW 28-11-11	*	3065
Mid-Continent Pet. Corp.'s No. 5 Fields, SEc SW NE 3-11-11	65	2717
Jennings et al's No. 1 Barnett, C SE SW 33-10-9	500	3331
Kingwood Oil Co.'s No. 1 Bruner, C SW NE SE 16-10-9	145	3285
I. T. I. O. Co.'s No. 4 Williams, C NW SE SE 34-10-8	172	3311
Foster Inv. Co.'s No. 1 Wallace, C SW SE NE 33-10-9	60	3408

Osage County—

Mid-Kansas O. & G. Co.'s No. 1, SW NE 31-23-10	*	2408
Tidal-Osage's No. 7, SE NE SE NE 20-24-9	*	2875
Oliphant et al's No. 1, C N L NW 31-25-9	*	1128
Douglas Oil Co.'s No. 1, SW SW 5-28-4	*	3360
Lewis Oil Co.'s No. 3, SE NE SE NW 29-25-8	200	2485
Fidelity Oil Co.'s No. 9, NW SW SE 16-21-12.	*	2083
Mid-Kansas O. & G. Co.'s No. 3, SW NE 33-35-11	35	1784
Skelly Oil Co.'s No. 3, C NE SE NE 2-21-8	60	2374
Barnsdall Oil Corp.'s No. 12, C S L SE 5-20-12	572	2058
Tidal-Osage's No. 18, SE NW SE SW 27-22-10	20	1230
I. T. I. O. Co.'s No. 2, NWc 1-21-8	100	2381
Pure Oil Co.'s No. 3, C S L N½ SE NW 36-22-8	50	2720
Sinclair O. & G. Co.'s No. 21, SE NW NE SW 32-22-10	35	1846
Tidal-Osage's No. 43, SW NW SE NW 34-22-10	120	2008
American Dev. Co.'s No. 19, C S L NE 13-23-10	35	1839
Wah-Sha-She Oil Co.'s No. 10, NW NE NW 2-28-11	50	994

Burbank Field—

Lewis Oil Co.'s No. 4, C SW NW NE 21-26-6	625	2976
Phillips Pet. Co.'s No. 16, NEc 11-27-5	125	2987
No. 13, NWc 12-27-5	50	2990
No. 16, NE NW 12-27-5	800	3022
Prairie O. & G. Co.'s No. 4, NWc SE 12-27-5	345	3049

Company, Well and Location	Initial Production Bbls.	Depth
No 1, NW SW 15-26-6	33	2987
No. 1, SWc SE 12-27-5	50	3053
Okmulgee County—		
Eastern Oil Co.'s No. 12 Berry, SWc NW NE 32-15-11	*	3045
Olean Pet. Co.'s No. 2 Haynes, C SW SE SE 11-15-12	*	2096
King & Jackson's No. 1 Cook, SEc NW 25-14-12	*	2204
Olean Pet. Co.'s No. 1 Haynes, C SE SW SE 11-15-12 (owd)	*	2662
M. Beard's No. 6 Garcia, NWc SE NW 23-14-14 (owd)	*	1775
Stone Mt. Oil Co.'s No. 3 Jefferson, NWc SW SW 22-14-15	*	1773
Iron Mt. Oil Co.'s No. 13 Johnson, C NE SE 24-13-14	50	1957
E. J. Lambert's No. 1 Manuel, SWc NW NE 16-13-15	¶	1574
Sheridan Oil Co.'s No. 1 Grayson, SEc SW SE 29-16-11	*	3018
Gray's No. 2-W Mickens, NWc SE SE 5-12-13	15	1540
Sterling Oil Co.'s No. 1 Edwards, SEc NE NE 30-12-14 (owd).....	125	2862
Pure Oil Co.'s No. 5 Kemp, NWc SE 25-13-11	30	2494
King & Jackson's No. 2 Proctor, SWc NW SE 11-13-12	10	2128
Enfisco Oil Corp.'s No. 1 Simmons, C W L SW NW 3-15-11	6	1876
Tulsa County—		
Minshall O. & G. Co.'s No. 4 Cooper, C SE NW 21-19-11	*	2378
Munn et al's No. 2 Jargee, NEc SE SW SW 20-19-12	20	2155
Minshall O. & G. Co.'s No. 4 Johnson, C W L NW SE 9-18-13 . ..	¶	1560
Wagoner County—		
Wright & Stryker's No. 1 Payne, C SE NW 16-18-16	*	740
E. C. Cobra's No. 1 Mingo, C N L SE SE 17-17-15.	¶	1236
McIntosh County—		
Montague's No. 2 Wineblood, SWc NW NW 2-12-16	*	2803
Carter County—		
Carter Oil Co.'s No. 2 Tucker, SE SE NW NW 29-3s-3w (owd)....	*	4055
Amerada Pet. Corp.'s No. 3 Fish, C W L NE NE 28-5s-1e (owd).....	50	1198
Jefferson County—		
Gypsy Oil Co.'s No. 1 Seay, C NW NE NW 3-7s-5w	*	1665
Humble O. & R. Co.'s No. 3 Seay, NEc SE 33-6s-5w	300	1198
Stephens County—		
Day Oil Co.'s No. 1 Phillips, C S L N½ NW NE 21-1s-8w	*	3010
Powell & Briscoe's No. 1-A Smith, NWc NE NE NW 31-1s-8w	15	2632
Ballard & Shopton's No. 1 Fee, NEc SE NW 4-1s-7w	*	2794
Lincoln County—		
Magnolia Pet. Co.'s No. 1 Maness, SEc SW NE 27-15-5	*	3271

Oklahoma

Kay County—		
Marland Oil Co.'s No. 2 Thomas, C SE SW SW 15-25-2w 1576		4030
Comar Oil Co.'s No. 4 Harvell, NEc SW NE 21-29-1w	745	2092
Pennock Oil Co.'s No. 2-G Endicott, C NW SE SW 34-25-1w	100	1878
Prairie Oil & Gas Co.'s No. 2 Smith, C SE SW SE 1-26-2w	120	2536
Twin State Oil Co.'s No. 3 Siler, C NW SW NW 22-25-2w	*	....
Garfield County—		
Cosden & Marland's No. 37 Schoolland, C SE NE SE 13-22-4w	500	2304
Sinclair O. & G. Co.'s No. 19, Kisne C SE NW NW 19-22-3w	200	1195
Lucky Seven Oil Co.'s No. 2 Dean, C SW NE NE 36-23-4w	*	1137
Grant County—		
Western States Oil Co.'s No. 2 Crouch, C NW NW NW 23-27-3w	20	3727
Cotton County—		
Malernee and others No. 1 Malernee, C S L N½ SW NE 29-2s-10w..	*	2725
Jefferson County—		
Cameron & Anderson's No. 1 Seay, NWc SW NE 31-6s-5w	*	1800
Carter County—		
Amerada Pet. Co.'s No. 1 Wolverton, NEc SE SE NW 34-5s-1w ...	15	1188
No. 12 Clay, SWc SW NE 28-5s-1e	186	1257
Sprague Oil Co.'s No. 5 Bennett, C W L SE NW 31-2s-2w	36	2514
Humble O. & R. Co.'s No. 3 Carpenter, C SW NE NE 22-2s-3w..1200		2575
Empire G. & F. Co.'s No. 13 Davis, C SW SE NE 34-2s-3w	*	100
Atoka County—		
J. F. Torrance's No. 1 Fee, SWc NE NE 1-2s-9e	*	2685
McPhearson's No. 1 Wild, SWc NW NW 7-2s-9e	*	4416
Stephens County—		
Magnolia Pet. Co.'s No. 2 Brooks, SWc SE SE NW 25-1s-9w	¶	2083
Clark & Cowden's No. 1 Brown, SWc SE SW 24-1s-8w	*	1507
Hughes County—		
E. L. Robinson & Amerada's No. 7 Carter, C NE NE NW 4-9-9.....	334	3075
Phillips Pet. Co.'s No. 2 Caney, C NE NE SE 3-9-9	30	3307
T. B. Slick's No. 7 Grayson, C SW NW SE 3-9-9	90	3325
Margay Oil Co.'s No. 1 Brown, SEc SW SW 17-9-9	50	3085
E. P. Hawkins' No. 1 Duzy, C NE NE NW 23-9-10	*	3188
Skelly Oil Co.'s No. 2 Carolina, C SE NW SE 2-9-9	*	....

Kansas

Butler County—		
Vickers Pet. Co.'s No. 2 King, SWc NE SW 17-24-4	80	2542
No. 1 Thomas, SEc NE NW 12-24-3	*	3004
Cowley County—		
Waite Phillips' No. 1 Albright, SWc SE 18-32-3	*	3536
Gypsy Oil Co.'s No. 2 Cooke, NEc NW SE 13-32-4	*	3580
J. A. Hull & Emerald's No. 1 Glacken, NEc SE 23-32-4	*	3065
Marland Oil Co.'s No. 3 Wright, NEc NW NW 9-33-3	*	3513
T. B. Slick's No. 2 Waite, SEc NE SW 19-32-3	140	3165
Waite Phillips & Marland's—		
No. 8 Johnson, NWc SE SE 20-33-3	805	3225
No. 3 Beebe, NWc NE NE 29-33-3	945	3268
No. 4 Beebe, NEc NW NE 29-33-3	75	3263
Elk County—		
Empire G. & F. Co.'s No. 3 Porter, NWc NE NW 13-29-8.....	90	2042
Theta Oil Co.'s No. 1 Weeks, SEc NW 3-30-12	¶	1620
Elk Pet. Co.'s No. 10 Kyser, NEc NW 10-30-9	25	2328
No. 1 Mullendore, SWc SE 3-30-9	65	2310
Tidal-Osage's No. 1 Snodgrass, SWc SE SW 30-30-10	¶	1411
Triplett Oil Co.'s No. 1 Miller, SWc SE 16-31-9	¶	1465
Dennman Bros.' No. 5 Evers, C NW SE 22-31-3	*	2210
Triplett Oil Co.'s No. 1 Johns, NEc 21-31-9	*	2488
Greenwood County—		
Skelly Oil Co.'s No. 2 Warrenburg, NWc NE NW 13-22-10	35	2190
Sinclair O. & G. Co.'s No. 14 Browning, SWc SE SE 19-22-10	300	2410
Skelly Oil Co.'s No. 3 Kipfer, SEc NE NW 13-22-10	200	2178
C. W. Titus' No. 2 Kipfer, SEc NE 11-22-11	250	1832
Fisher, Lauck & Moore's No. 2 McElroy, SWc NE 12-22-11	200	1832
No. 3 McElroy, SWc SE SW 12-22-11	200	1828
Empire G. & F. Co.'s No. 1 Crowell, NWc NE NE 14-22-11	170	1903
Transcontinental's No. 8 Green, SWc SE SW 2-23-9	300	2365
Murphy et al's No. 2 Green, SWc 2-23-9	500	2373
Greenland Oil Co.'s No. 4 Green NEc 10-23-9	50	2372
No. 5 Green, NEc SW SE 10-23-9	250	2360
Skelly Oil Co.'s No. 7 Teeter, NEc SE 15-23-9	200	2361
Empire G. & F. Co.'s No. 23 Teeter, SEc SW NE 18-23-9	150	2478
Roth & Mission's No. 53 Thrall, SWc NE SE 29-23-10	65	2403
Ark. Fuel Oil Co.'s No. 12 Bays, C SW NE SW 29-23-13.....	15	1640
Lima Iola Oil Co.'s No. 3 Johnson, C S L NE SW 13-23-12....	20	1722
Bisango et al's No. 6 Gelroy, NEc SE NW NE 6-23-13	15	1646
Empire G. & F. Co.'s No. 3 Greegan, SEc SW NE 32-22-11	*	2160
York State Oil Co.'s No. 11 O'Neil, NWc NW SE 32-22-11	*	....
Empire G. & F. Co.'s No. 1 Winzler, SWc NW SE 17-22-13	*	1830
Enterprise Dev. Co.'s No. 1 Beel, SWc NE 32-22-11	*	2060
Roxana Pet. Co.'s No. 4 Marshall, NEc SE NW 23-24-9	*	....
Marion County—		
White Eagle's No. 1 Wann, SEc SW SE 8-21-4	*	2548
Rice County—		
H. T. Proctor's No. 1 Taylor, NWc 15-21-10w	*	....
Russell County—		
Lee Bullock et al's No. 1 Harbaugh, SEc NE 24-13-15w	*	375
Valerius O. & G. Co.'s No. 5 O-V, SEc 7-12-15w	160	2818
No. 4 O-V, SWc NW NW 17-12 15w	360	2998
Sumner County —		
Marland Oil Co.'s No. 1 Thiesson, SWc SE SE 22-34-2	179	3501
Ellis et al's No. 1 Suther, SWc NW 7-30-1w	*	3707
Woodson County—		
Iowa-Kansas Dev. Co.'s No. 1 Stockerbrand, NWc SW NW 1-24-14..	30	1644

Eastern States

PENNSYLVANIA

Bradford Field—		
South Penn Oil Co. Bingham 150, tract 60	7	....
Bingham 150, tract 54	5	....
Bingham 554, tract 41	4	....
Bingham 439, tract 80	3	....
Bingham 423, tract 11	3	....
Bingham 533, tract 70	2	....
Bingham 88, tract 11	4	....
Redfield 96	4	....
South Penn 35	7	....
South Penn 92	3	....
Associated Producers Co. Bingham 580, tract 345	12	....
Bingham 153	5	....
Hazlewood & Kennedy Bingham 176, tract 102	7	....
Lane & Co. Bingham 430, tract 1..	10	....
Bovaird & Park Bingham 541, tract 28	5	....
Anna Jane Vantine Vantine 33.....	5	....
T. P. Thompson Franchot 8.....	7	....
Pressure Oil Co. Howard 1	7	....
Gridiron Oil Co. Duke 1.....	4	....
T. B. Wilson Borden 1	7	....
T. B. Wilson Borden 2	*	....
Forest Oil Co. Porter 1	4	....
Noble 1	3	....
Hazlewood Oil Co. Hazlewood 1...	5	....
Phoenix Oil Co. Clark & Kennedy 155	9	....
George W. Bovaird Bingham 391, tract 75	5	....
L. C. Dana, Dana 1	7	....
Smith & Co. Lincoln 1	5	....
Butler County—		
Vensel, Dufford & Co. Neel Hrs. 4..	15	....
Bear Creek Oil Co. Donnelly 1	12	....
Lang & Co. McCarren 3	14	....
J. A. Elliott, Goehring 4.....	12	....
Woods & Heeter Ferguson 2.....	¶2	....
Simpson & Heasley Beck 1 .....¶1¼		....

Company, Well and Location	Initial Production Bbls.	Depth
E. Snow & Co. Moore 1	¶1	....
Duncan, Elliott & Co. Duncan 3	*	....
Venango County—		
J. B. Smithman Button 34	3	....
Ttitus, McKim & Co. James 6	3	....
Huffman, Kelley & Co. Sayers 11	3	....
Phipps Sons Co. Phipps 6	3	....
Franklin Trust Co. & Reeves Blair 40	2	....
Zimmerman & Son Zimmerman 7	2	....
C. B. Kern Kern 12	2	....
O'Brien & Nickle Knapp 1	2	....
Center-Middle Field—		
Rembold & Co. Osgood 7	50	....
W. E. Campbell Estate Bingham 1	4	....
E. Pequignet Siggins 17	¶1	....
J. L. Yerden Bingham 1	3	....
Rocky Grove Oil Co. Bingham 14	2	....
Clarion County—		
W. W. Wilson Wilson 1	¶1½	....
United Natural Gas Co. Fee 3675	¶1	....
F. G. Yonkers & Co. Black 1	*	....
Heeter, Potts & Edinger Keating 3	4	....
Allegany County—		
F. W. Forney & Co. Thomas Donaldson 1	2	....
Ferguson & Co. Conrad Harat 1	2	....
Harbison & Co. Reed McCray 1	¶1¼	....

NEW YORK

Company, Well and Location	Initial Production Bbls.	Depth
Allegany County—		
M. J. Crowley & Co. Crowley 1	7	....
Rockwell & Brown First Trust 65	12	....
Stebbins & Atwood Hazeltine 1	12	....
O'Connor & Duke Clark 1	12	....
T. J. Gilligan & Co. Gilligan 1	7	....

WEST VIRGINIA

Company, Well and Location	Initial Production Bbls.	Depth
Doddridge County—		
Carter Oil Co. W. B. Maxwell 32	¶½	....
Williams & Nay Luella Smith 1	3	....
Trainer Bros. & Co. M. Scott 1	3	....
Imperial Oil & Gas Products Co. N. P. Hudkins 1	5	....
Calhoun County—		
Hope Const. & Ref. Co. G. W. Hardman 1	¶2½	....
Parker & Daily John Richardson 1	¶2½	....
South Penn Oil Co. U. G. Downey 1	5	....
Hope Natural Gas Co. Parson-Bennett 1	3	....
Boone County—		
Owens Bottle Machine Co. Bull Creek Coal 1	¶¼	....
Bull Creek Coal 2	¶2	....
Cassingham & Co. 7	¶2	....
W. W. Smoot 1	¶½	....
Gilmer County—		
Star Oil & Gas Co. A. R. Brake 2	*	....
Hope Natural Gas Co. M. O. Burnwell 1	¶2	....
Pittsburgh & W. Va. Gas Co. S. E. Moody 1	¶2½	....
Ohio Fuel Oil Co. William Walmoth 1	¶2	....
Wetzel County—		
South Penn Oil Co. B. W. Peterson 16	1	3097
Hope Natural Gas Co. M. J. Robins 1	¶¼	....
Lemley Bros. Coal & Gas Co. Lemley heirs 1	¶2	....
Roane County—		
United Fuel Gas Co. J. L. Meadows 1	¶¼	....
W. S. Simmons 1	¶½	....
Putnam County—		
L. R. Sweetland & Co. E. S. Henderson 1	¶2	....
Dunbar Natural Gas Co. P. Wert 1	5	....
Lewis County—		
Hope Natural Gas Co. Bertha Rhodes 1	*	....
S. C. Yoke 1	¶¼	....
Wood County—		
Dallman & Kingsbury Dollman 5	5	....
Harrison County—		
P. F. Coger Coger 1	5	....
Tyler County—		
Brooks Oil Co. Edward Brooks 2	5	....
Lincoln County—		
Dave Fox & Co. J. and W. Grass 1	5	....
Ritchie County—		
D. C. Reece & Co. West Virginia tract 30	1	....
Kanawha County—		
United Fuel Gas Co. Fannie Boyd 1	¶¼	....
Cabell County—		
Aetna Oil & Gas Co. Hyman-McCullough 1	¶¼	....
Marion County—		
South Penn Oil Co. G. W. Hawkins 1	¶¼	....
Logan County—		
South Penn Oil Co. Yawkey-Freeman 7	*	....

KENTUCKY

Company, Well and Location	Initial Production Bbls.	Depth
Barren County—		
Porter & Co. McLaughlin 5	30	....
Consolidated Gas Co. Depp 1	15	522
T. L. Gorby Saunders 1	15	....
Gillespie & Wiggins Scott 9	10	511
Lew J. Emery, Jr., Sons Co. Depp-Greer 8	15	....
Jones 3	*	....
Star Oil Co. Ritchie 23	11	565
Oscamp Development Co. Oskamp 25, 26	*	....
Elem Oil & Gas Co. Warder 9	8	504
Henderson Oil Co. Burris 8	*	....
Houchins Leasehold Co. Ziegler 8	5	603
Wood Oil Co. Cox 1	*	....
Allen County—		
Bastrus & Pearson Wheat 17	50	294
H. A. Kiser Jones 3	25	292
Work & Hice Lyle 3	10	....
Kentucky Oil Synd. B. Stamps 17	10	432
White Plains Oil & Gas Co. M. Neil 7	10	316
Lee Moore Moore 5	5	510
W. L. Baird J. L. Harvis 4	*	226
Owensboro District—		
Chicago Pet. Synd. Widow Crowe 5	50	....
Ira Crowe 1	50	....
Pennsylvania-Indiana Co. 2 Jess Swope	4	....
3 Jess Swope	18	....
F. V. Miller 10	16	....
Warren County—		
Onsel-Hanrahan Oil Co. Wilson 7	75	1167
A. G. Johnson J. L. Jenkins 9	15	1036
Roy Hogan E. C. Dillard 1	*	....
T. A. Sheridan G. Davenport 8	5	....
J. J. Fort J. K. Motley 1	*	655
Wayne County—		
T. M. Taylor & Co. Sarah Stinson 1	5	....
Wise & Co. Denney 1	*	....
J. R. Dodson Joseph Lair 1	*	....
D. C. Adkins Burnett heirs 1	*	....
Johnson-Magoffin Counties—		
Hudson & Collins Wheeler 1	3	....
Wheeler 2	1	....
Virginia Gasoline Co. Greene Risner 5	10	....
Metcalf County—		
J. C. Richards Edmonton 1	*	586
Hartrampf & Co. L. H. Thompson 1	*	420
T. Petty & Co. A. J. Thompson 1	*	1150
Lawrence-Johnson Counties—		
Keaton Oil & Gas Co. J. Lyon 29	15	819
W. M. Stone & Co. Ira Lester 9	15	823
Estill County—		
Superior Oil Corp. Isom Ballard 17	5	....
Adma Oil Co. J. Arthur 17	*	....
Floyd County—		
Eastern Carbon Black Co. Maud Cooley 1	¶3½	....
Kate Spencer 1	*	....
Lee-Owsley Counties—		
Combs Bros. Dev. Co. Jack Evans 1	5	....

TENNESSEE

Company, Well and Location	Initial Production Bbls.	Depth
Clay County—		
Dafoe & Co. Rogers 1	*	500

SOUTHEASTERN OHIO

Company, Well and Location	Initial Production Bbls.	Depth
Noble County—		
J. H. Yearian & Co. Leroy Johnson 1	*	....
Schentz & Co. Huff 4	4	....
Belmont County—		
Belmont Drilling Co. F. L. Carpenter 1	5	....
Muskingum County—		
Local Oil Co. O. C. Evans 1	3	....
Columbiana County—		
Ben Oil Co. Luther Powell 5	2	....
Morgan County—		
The Pure Oil Co. B. A. Baringer 1	¶¼	....
Monroe County—		
W. B. Anderson & Co. Christ Cline 1	*	....
Washington County—		
J. F. Ward William Harvie 25	*	....

CENTRAL OHIO

Company, Well and Location	Initial Production Bbls.	Depth
Licking County—		
I. J. Denbow & Co. Carrie Weiss 3	5	....
Carter Oil Co. A. C. Bell 1	¶1	....
Jacob Vandermark 4	155	....
James Settles 3	8	....
Midland Oil Co. Homer Cooperrider 7	3	....
Fairfield County—		
Clinton Oil & Gas Co. Edward Moster 2	*	....
Rushville Oil & Gas Co. Robert Hyde 2	5	....
Hocking County—		
Jacobs Oil Co. John Jacobs 5	30	....
Holmes County—		
East Ohio Gas Co. L. A. Sowash 2	30	....
Coshocton County—		
The Pure Oil Co. E. R. Keiser 2	10	....
Perry County—		
C. L. Bullock & Co. T. & M. Monoham 5	4	....
Knox County—		
Rocky River Oil Co. Harry Sniveley 15	3	....

NORTHWESTERN OHIO

Company, Well and Location	Initial Production Bbls.	Depth
Wood County—		
Lewis W. Johnson Alec Beard 6	3	1255
Ohio Oil Co. Northwestern Ohio Gas Co. 49	4	1318
Charles Mercer 22	*	1500
J. T. Montgomery J. J. Faylor 19	5	1441
Mercer & Ray Mary Wallace 18	*	1500
Eurnell & Gage Delos Speck 2	10	1263
Hancock County—		
Porter & Hovis Lemuel Aurand 16	10	1305
Porter & Co. J. McClelland 3	5	1302
Janeri Oil & Gas Co. Edward Boutwell 2	12	1301
Mercer County—		
June Oil Co. George Hellworth 5	15	1198
Cole Oil & Gas Co. L. L. Lowery 1	9	1186
C. E. Young & Co. J. C. Dues 2	2	1185
Allen County—		
Kelley Bros. W. H. Breese 1	*	1350
Gwynn Oil & Co. J. Beerman 3	5	1313
West Point Oil Co. Seth McGee 1	5	1399
Hardin County—		
Boston-Southwestern Oil & Gas Co. Mary C. Irwin 1	80	1495
Shelby County—		
Slagle & Johnson Frank Danziger 2	56	1200
Ottawa County—		
Sherman & Richards Silas Ames 7	12	1331
Shelby County—		
Ohio Oil Co. Jacob Reef 10	4	1341
Crawford County—		
The Sun Co. Wooster Reidle 2	*	2530

INDIANA

Company, Well and Location	Initial Production Bbls.	Depth
Pike County—		
H. E. Merrifield & Co. B. Shaffer 9	35	1386
Gibson County—		
J. H. Young & Co. Teaman Bros. 1	30	1491

ILLINOIS

Company, Well and Location	Initial Production Bbls.	Depth
Crawford County—		
Homer Barker & Co. D. Everingham 1	¶½	940
Frank McNeal & Co. C. S. Jones 5	1	1011
Peoples Bank & Trust Co. Silas Wilkins 2	*	....
Wabash County—		
Smith & Andrews Joseph Geiger 1	*	1731
Hartman, Young & Co. Lutecia Miller 1	*	1517
George Porter & Co. Lewis Armstrong 1	*	1530
Lawrence County—		
Citizens Oil Co. A. M. Legout 8	*	....
Ohio Oil Co. J. W. Clark 12	1	986
Clark County—		
H. A. Wertz & Co. G. W. Harrod 1	*	1478

WILDCATS FROM ALL SECTIONS

Texas Panhandle Wildcats

COMPLETION

Company, Well and Location	Initial Production Bbls.	Depth
Carson County—		
Culbertson Bros. et al V. B. Armstrong 1	*	3560

DRILLING REPORT

CARSON COUNTY — American Ref. Co.'s Burnett 1-C, dr 1825 ft; Burnett 1-D, dr 815 ft. Crosbie et al's Burnett 2, dr 2830 ft; Burnett 3, rig. Culbertson Bros. et al's Burnett 1, lcn. Gulf Prod. Co.'s Burnett 8, flowing 20 bbls per hour 2882 ft; Burnett 9, dr 275 ft. Magnolia Pet. Co.'s Burnett 1-A, dr 1410 ft. Marland Oil Co.'s Burnett 2, rig; Burnett 3 and 4, lcns. Olson et al's Burnett 1, sd 2970 ft. Premier Oil Corp.'s Burnett 1, sd making gas 2860 ft. W. W. Silk et al's Burnett 4, ur 10-inch cas 1810 ft; Burnett 5, lcn. The Texas Co.'s Burnett 6, dr 710 ft; Mary C. Burnett 3, dr 2620 ft.

COTTLE COUNTY—T. J. Woodley et al's R. C. Dulaney 1, sd 2945 ft.

DICKENS COUNTY—Mickels et al's Pitchfork 1, sd 350 ft.

GAINES COUNTY — Frank Phelps & Mundy's M. C. Lindsey 1, sd cas 180 ft.

GRAY COUNTY—A. R. Anderson-Block et al's Beaver-Bradford 1, sd, 2830 ft. C. H. Clark et al's Coombs-Worley 1, sd 2935 ft. Danciger Oil & Ref. Co.'s J. B. Bowers 1-A, sd 2750 ft. W. H. Holmes' I. B. Morse 2, sd 3147 ft Wilcox Oil & Gas Co's Coombs-Worley 2, dr 2825 ft.

HUTCHINSON COUNTY — Amarillo Oil Co.'s L. Bivens 2-B, 180 million cu. ft gas cased in, salt water 3015 ft. W. T. Cobe et al's J. A. Whittenburg 1, dr 1520 ft. Dixon Creek Oil Co.'s Smith 2, dr 2350 ft. Gulf Prod. Co.'s Dial-Perkins 2, swabbed 105 bbls oil first 15 hours, td 2890 ft in sandy lime. J. H. Middleton et al's J. Weatherly 1, dr 1940 ft. New Domain Oil & Gas Co.'s Barton 1, sd water 2740 ft. Panhandle Ref. Co. et al's Dial-Perkins 1, std 2592 ft; Dial-Perkins 2 and J. W. Whittenburg 1, lcns. J. R. Phillips et al's W. L. Kingsland 1 and 2, rigs. Prairie Oil & Gas Co.'s D. Shaw 1, pull 6⅝ cas 3560 ft. Western Enterprise Oil & Gas Co.'s Smith 2, rig. Tex-O-Oil Co.'s Johnson Bros. 1, sd 1175 ft.

MOORE COUNTY—Amarillo Oil Co.'s Masterson 1-A, cemt cas 2360 ft.

POTTER COUNTY—Amarillo Oil Co.'s W. H. Bush 1, dr by cas 3495 ft; L. Bivins 4-A, materials.

ROBERTS COUNTY — Phil Engle et al's Mrs. Lederick 1, dr 2790 ft.

WHEELER COUNTY—Angus et al's Ember 1, dr 1425 ft. Best Oil & Gas Co.'s Tindall 1, lcn in NW¼ sec 19, H&GN Ry sur blk A-8. Globe Oil Co.'s Williams-Laycock 1, dr 1425 ft. Noble Oil Co.'s Williams-Laycock 1, dr 1710 ft. J. J. ook et al's H. C. Phillips 1, rig W. D. Sheddon et al's B. F. Westmoreland 1, dr 1520 ft Texhoma Oil & Ref. Co. et al's J. H. Jackson 1, sd for storage with 1850 ft oil 2141-43; Jackson 1-A, rig. Hal Vaughan & Pendleton's P. W. Krey 1, dr 1650 ft. Jim Whittington's Williams-Laycock 4, spraying 15 bbls oil from top pay while set 6⅝ cas 2100 ft; G. W. Porter 1, fsh tools with show oil 2150 ft. Jim Whittington et al's C. T. Nicholson 1, making one million ft gas, dr 2050 ft.

North Texas Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
Baylor Conuty—		
L. E. Sheldon-Mel Richards et al W. B. Mills 1	230	1444
Montague County—		
Gulf Prod Co. L. E. Benton 2 (East of Nocona)	*	3933
Throckmorton County—		
Downing et al Ewalt 1	*	1502
Hill-Roberts et al Polk County Fee 1	*	1505
Humble Oil & Ref. Co. King 1.....	*	2315
Johnson & Northwest Oil Co. Batchelor 1	*	1505
Bruce Larkin & Panhandle Ref. Co. Richards 1	15	1834
Murchison-Fain et al T. A. Waggoner 1	*	1203
Mitcham & Logan et al Richardson 1	*	1605
Sheldon et al Whitiker 1	*	1602
Wilbarger County—		
Bridwell-Heydrick & Texas Pacific Coal & Oil Co. W. T. Waggoner 1-A	*	2392
Consolidated Oil Co. Waggoner 2 (sec 4)	*	2103
Sam Kelly 1, (sec 14, blk 5)....	*	2087
T. A. Key et al Waggoner 1	*	2351
Mattylee Lippard et al Waggoner 3, dd, (sec 52, blk 2)	155	2091
The Texas Co. Castlebury 1-B....	*	2805
Waggoner 300, (sec 14, blk 13)..	60	1658

DRILLING REPORT

BAYLOR COUNTY—J. S. Cosden et al's Garner 1, dr 900 ft. Brit Cranfill et al's Mills 3, dr 1170 ft. Dallas Oil Co.'s Shawver 1, sd 1885 ft. W. H. Dyer et al's Cox 1, dr 1610 ft. Lehman et al's Shawver 1, sd 1550 ft. McDonnald & Smith's Upshur County Fee 1, spudded and sd. Texhoma Oil & Ref. Co.'s Portwood 2, dr 1150 ft. Southern Exploration Co.'s Michna 1, spudded and sd. Gulf Prod. Co.'s W. B. Mills 1, rig.

CLAY COUNTY—J. L. Ashcraft et al's R. L. Robinson 1, sd 1490 ft. Mills Bennett et al's E. L. Holloway 1, testing sand after shot 1729 ft. Lone Star Gas Co.'s Martin 24, dr 760 ft. John O'Neil et al's J. F. Alcorn 1, sd 2070 ft. Gulf Prod. Co.'s C. M. Worsham 6, dr 300 ft.

COOKE COUNTY—Big Indian Oil & Dev. Co.'s F. Lester 1, dr 1555 ft. Godley Oil & Gas Co. et al's M. E. Florence 1, dr 2930 ft. C. C. Lanier et al's A. Hyman 1, lcn. Leonard & Jones' Hamilton 1, sd 1885 ft. Chas. Pet. titt et al's Nelson 1, sd 2620 ft; M. F. Williams 1, dk. W. J. Rawson-Lyles et al's Aldridge 1-A, dr 1050 ft. Red River Drilling Co.'s Jones 1-A, sd 2180 ft.

DENTON COUNTY — McNeill & Blackstock's T. Wright 1, dr 450 ft. Gainesville Oil Synd.'s Kate Fontenberry 1, fsh 1380 ft.

FOARD COUNTY—The Texas Co.'s McCoy 1, dr 730 ft.

GRAYSON COUNTY—The Texas Co.'s G. W. Cannon 1, testing sand 2658-60 ft. Clopton & McMahon's Ida Thorn 1, dr 2820 ft. H. H. Johnson et al's Marshall 1, sd 1100 ft. Whitesboro Oil & Dev. Co.'s Jewell-Anderson 1, sd 1350 ft. Zee-Tex Oil Co.'s Griffin 1, sd 2340 ft.

JACK COUNTY—Humphreys Corp. et al's W. C. Campbell 1, (near Avis) lcn. Robinson et al's Marshall 1, dr 320 ft.

MONTAGUE COUNTY—Arco Oil Co.'s M. H. Salmon 1, dr 1140 ft. Daniels-Rutis & Panhandle Ref. Co.'s M. H. Salmon 2, testing oil sand 927-38 ft. Humphreys Corp.'s A. B. Hinton 1, dr 1795 ft; W. W. Jones 2, fighting gas blowout 834 ft; J. W. Maddox 2, dd, sd 2040 ft; Maddox 4, lcn abn. Nocona Gas Co.'s R. Hynds 2, changing to rotary, td 340 ft. Owenwood Oil Corp.'s M. H. Salmon 1, sd 1645 ft. Pure Oil Co.'s Oldham 1, rig; W. W. Jones 1, testing oil pay 925 ft. Texhoma Oil & Ref. Co.'s Howard 5, dr 1715 ft. The Texas Co.'s N. J. Howard 1, testing oil pay 895-902 ft; Isaac Gist 3-A (dd) co 1947 ft; Gist 4-A, rig; M. H. Salmon 1, (dd) co 1685 ft. Newblock Oil Co.'s J. W. Maddox 1, testing sand 921 ft. Universal Oil Co.'s S. P. Steadman 1, dk.

THROCKMORTON COUNTY — Domestic Oil Co.'s Goeber 1, sd 815 ft; Howsley 1, dr 520 ft. Flowers et al's Travis County Fee 1, dr 1440 ft. Hoffer Oil Corp. et al's Reynolds Cattle Co. 1, dr 1150 ft; Parrott 1, rig. Humble Oil & Ref. Co.'s A. S. Harrison 1, rig; Stubblefield 2, dk. Red Bank Oil Co.'s Graham 1, ur casing 1050 ft. Reiter-Foster Oil Corp.'s Stubblefield 2, section 991, dr 500 ft. Richardson Bros. et al's Thomas 1, fsh 885 ft. Stiles & Schimmel's Stacey 1, dr 450 ft. Schimmel Oil Co.'s Kelly 1, dr 2680 ft. Schimmel et al's Putnam 1, dr 215 ft. Southern Oil Co.'s Key 1, dr 635 ft. E. L. Smith Oil Co.'s Burkhalter 1-A, dr 570 ft. Texhoma Oil Co.'s Reynolds 2, sd making 1,500,000 cubic ft gas 834 ft. Texhoma et al's Graham 1, sd 350 ft. Tucker et al's Reynolds 1, sd 715 ft.

WILBARGER COUNTY—Atlantic Oil Prod. Co.'s Waggoner 2-B, sd 1440 ft. F. A. Beatty et al's Waggoner 1-A, (sec 15) dr 1100 ft; Waggoner 1, (sec 47, blk 2) deepened into water 1974 ft. Burton Ruff & Empire's Waggoner 1, sd 2450 ft. Bridwell-Heydrick et al's McCracry 1, set 10-inch casing 1421 ft. Bob Brewer et al's Schmoker 1, sd 2125 ft. W. F. Broughton et al's Waggoner 1, spudding. Consolidated Oil Co.'s Waggoner 1, (sec 27) ur casing 1610 ft; Waggoner 1, (sec 2, blk 4) fsh 1150 ft; Waggoner 1, (sec 7, blk 4) co 1900 ft; Waggoner 1, (sec 4, blk 5) dr 525 ft; Waggoner 1, (sec 50) spudding; First State Bank Fee 1, rig. E. A. Durham et al's Waggoner 1, dr 1065 ft; Waggoner 2, fsh 1160 ft; Waggoner 3, dr 1290 ft. W. R. Duke et al's (was Andrade) Archer 1, sd 425 ft. J. W. Dyson et al's Waggoner 1, (SE corner sec 46, blk 4) flowing oil by heads, dr sand 1871-76 ft. Electra-Texas Oil Co.'s Waggoner 2, sd repairs 1155 ft. Wood W. Graham et al's M. J. George 1, sd 1530 ft. Gulf Prod. Co.'s Waggoner 2-R, (sec 50, blk 14) dr 160 ft. Hoffer Oil Corp. et al's Waggoner 1, (sec 43, blk 2) dr 1250 ft; Waggoner 1, (sec 12, blk 14) spudding. Dan Holmes et al's Richardson 1, dr 1720 ft. Herbert Oil Co.'s Waggoner 1, dr 1050 ft. Humble Oil & Ref. Co.'s Waggoner 1-D, rig; Waggoner 1-E, rig. J. B. Levy et al's Waggoner 2, (sec 51, blk 14) sd 2450 ft; Waggoner 1-A, (sec 58, blk 4) dr 695 ft. Lippard Oil Co.'s Fluhman 1, dr 2065 ft. Mattylee Lippard et al's Waggoner 1, dr 2320 ft; Waggoner 2, dr up bailer 1550 ft. C. E. Litchfield et al's Pyle 1, sd 1355 ft. E. A. McKanna et al's Waggoner 1, (sec 48, blk 4) fsh 1325 ft; Waggoner 1, (sec 31, blk 4) dr 1465 ft. Maer-Staniforth et al's Waggoner 1, (sec 4) dr 1325 ft; Waggoner 1, (sec 10) lcn. McCamey-Sherrin et al's Waggoner 1, fsh 1380 ft. Magnolia Pet. Co.'s More-Waggoner 1, (sec 59, blk 4) co 2270 ft. McLester Oil Co.'s Waggoner 1, sd 1550 ft. Prairie Oil & Gas Co.'s Brownlee-Waggoner 1, dr 2050 ft. Panhandle Ref. Co. et al's Key 1, dr 1995 ft. Quaker Oil Co.'s Waggoner 1, rig. C. M. Root et al's McCrary 1, sd 2400 ft. J. F. Shipley et al's B. W. Murphy 1, dr 1650 ft. M. L. V. Smith et al's Waggoner 1, (sec 24) dr 580 ft; Waggoner 1, (sec 35) making gas 1353-55 ft, dr hole full water 1550 ft. W. A. Smith & Mark Kleeden's Castlebury 1, sd 1100

In the Goose Creek Oil Field—G-E Motors

For example, here's a view through the thickest of the Goose Creek oil field on the Gulf Coast, which produced over 4,000,000 barrels of oil in 1924.

Almost every derrick is a well, and nearly every well represents a G-E oil well motor.

There are over 250 G-E oil well motors operating in this field—and G-E standard motors drive oil-gathering and pipe-line pumps, also water pumps. The best producing levels in this field are around 4500 feet.

G-E Two-Speed Oil Well Motor working on the Humble Oil & Refining Company's lease at Goose Creek. This motor handles 4400 feet of rods and tubing with a fluid lift of the same length.

7A-67

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL LARGE CITIES

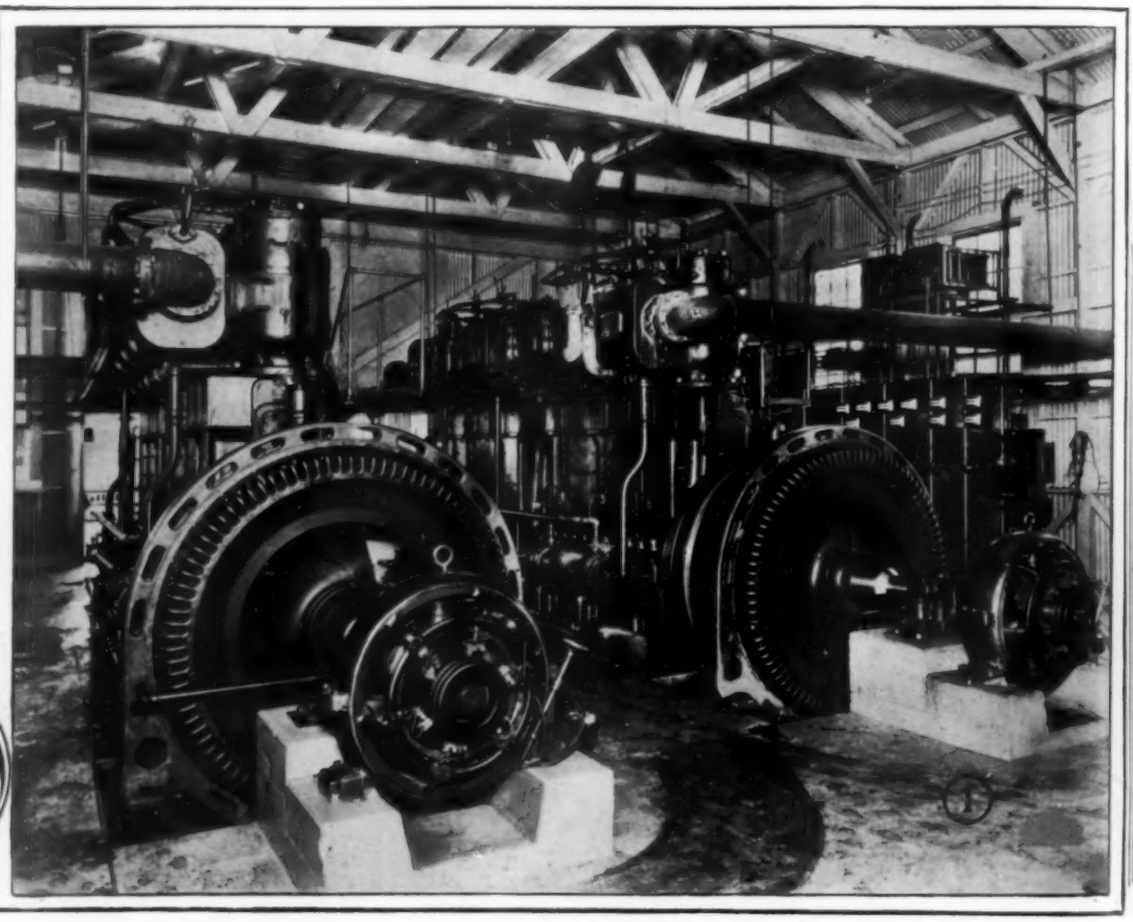
G-E Has Served the Oil Fields

In 1898 a Thomson-Houston direct-current generator of around 60 kw. furnished power to 14 motors connected to oil well pumping rigs —much in the same manner as those of today.

The same generator, switchboard and motors are still in use. The original installation may be seen at the lease of the South Penn Oil Company, Finney, Washington County, Pennsylvania.

Today, thousands of oil wells in the United States are electrified, because electric motor drive is essential to the most efficient production and maintenance of these wells, from which a large supply of the world's oil is now coming.

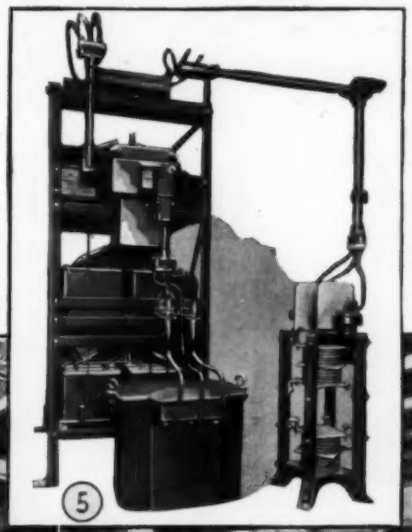
G-E has been written into every phase of the electrical development of oil fields for over a quarter of a century. Our oil field specialists are always available to assist the oil field operator in the selection of the most suitable and efficient electrical equipment for his specific purpose.

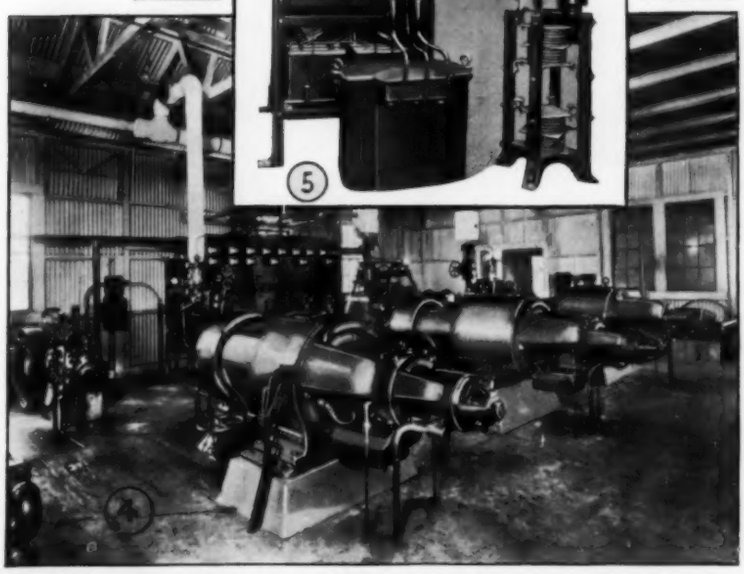


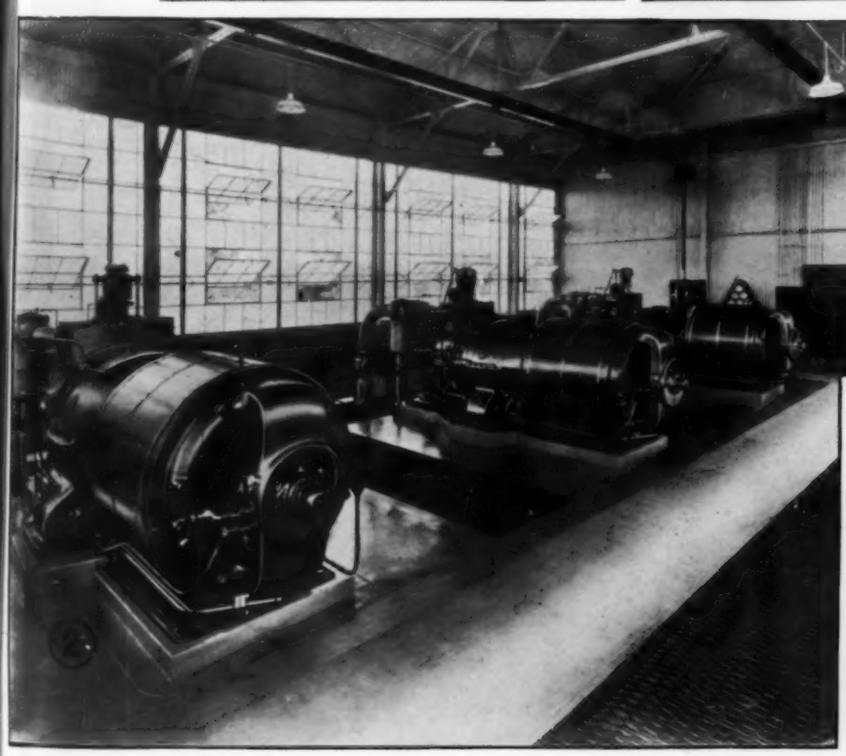
GENERAL

for Over 25 Years

1. *Two 300 Kilowatt oil engine driven G-E Generators in a Texas oil field power plant operating at full capacity.*
2. *Three 500 Kilowatt G-E Turbo-generators in Texas oil field power plant. This efficient plant shows a saving of 7 to 1 over steam operation of individual oil wells.*
3. *G-E Switchboard and Exciter. Gulf Production Company's Power Plant, Hull, Texas.*
4. *A 100 and two 200 Kilowatt G-E Turbines doing good work since 1920 at the Republic Production Company's Power Station at Hull, Texas.*
5. *G-E 120 K.V.A. Static Condenser and Oxide Film Lightning Arrester —on duty at the Humble Oil and Refining Company's lease at Goose Creek. One of seven—all in operation two years without loss of a fuse or a section.*







ELECTRIC

Complete Service Facilities

General Electric equipment is readily available for your work.

Close to your operations G-E has motors, controllers, transformers, and other equipment—warehouses and service shops—and oil field specialists always on the job.

Back of this complete field service are the great manufacturing plants of the General Electric Company in 33 cities, and G-E world-wide facilities to serve you electrically.

Oil field specialists and service at:

Dallas	Kansas City
Denver	Oklahoma City
Houston	Tulsa
Los Angeles	San Francisco

Airplane view of Schenectady Works, General Electric Company

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N.Y., SALES OFFICES IN ALL LARGE CITIES

ft. Simms Oil Co.'s Collins 1, fsh 1180 ft. States Oil Corp.'s Waggoner 1, fsh 900 ft. Texhoma & Burton's Waggoner 1, dr 1320 ft. Texhoma & Holmes' Mrs. A. Thomas 1, fsh tools 1565 ft; Flanniken 1, dr 2280 ft. The Texas Co.'s Owens 1-A, dr 660 ft. Tidal Oil Co. et al's Waggoner 1, (sec 37, blk 4) dr 160 ft. W. D. Wells et al's Waggoner 1, sd 1500 ft. G. C. Wood et al's McGill 1, sd 965 ft. Whibert Oil Co.'s Waggoner 1-B, dr 625 ft; Waggoner 1-C, dr 1410 ft; Waggoner 1-D, dr 910 ft. Thelma Wells et al's Waggoner 1, dr 375 ft.

Central West Texas Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
Brown County—		
Gillman et al Newton 10	350	1290
Glasscock County—		
Gulf Prod. Co. L. S. McDowell 1-C	*	3910
Mitchell County—		
The California Co. Paul Elder 2-B.	255	3067
Paul Elder 3-B	220	3050
Reagan County—		
Texon Oil & Land Co. University 10, C NE NW sec 36 2675		2947

DRILLING REPORT

BROWN COUNTY — Cal-Bro Oil Synd.'s Prater 1, sd 780 ft. Gillman et al's Newton 11 and 12, rigs. Gillman & McMurray's W. H. G. Chambers 1, Teston 4, Moore 4, all rigs. Gillette et al's Prater 4, dr 800 ft. Honea et al's DeBusk 2, fsh cas 2345 ft. Howell & Houseman's Helms 1, spudding. Huffman et al's Armstrong 1, dr 320 ft. Ingleright et al's Eubanks 1, lcn. Mendenhall et al's Newton 5, dr 860 ft. Moore et al's Kilgore 1, machine; Chambers 1, dr 2495 ft. Moore & Wilson's Gafford 3, dr 1185 ft; Gaiiord 4, rig. McMurray et al's Newton 6, dr 1185 ft; Newton 7, dr 990 ft. Prairie Oil & Gas Co.'s Armstrong 1, rig; Gaines 5, dr 1150 ft; Gaines 6, spudding; Gaines 7, dr 450 ft; Gaine's 8, dr 650 ft; Newton 6, lcn; Newton 10, dr 600 ft. Rhoades & Higher's Prater 6, dr 995 ft; Prater 7, spudding. Ward Oil Co.'s Windham 1, dr 2225 ft.

CALLAHAN COUNTY — Nichols et al's Davis 1, dr 1050 ft. Urban et al's Finley 1, dr 990 ft.

COLEMAN COUNTY—Canyon Oil & Gas Co.'s Harris 1, lcn; Morris 1, dr 1925 ft. Duncan et al's Gray 1, spudding.

PALO PINTO COUNTY — Burton-McKee Oil Corp.'s Strawn Coal Co. Fee 4, sd 3100 ft. J. D. Crawford & Singleton's L. Smith 1, sd 3028 ft. Webb Dalton et al's Perkins 1, sd 1810 ft. E. T. Hart et al's E. A. Cardwell 1, sd 2050 ft; Cardwell 2, dr 750 ft. Hart Oil Corp.'s Hart 10, std 2040 ft; Orme 1, dr 1715 ft. Nelson Oil Synd.'s Owens 1, dr 380 ft. Moore & Sneboldt's Stuart 3, lcn. Owens & Burkett's Chestnut 1, sd 3790 ft. Pender Prod. Co.'s Rasmussen 1, dr 3445 ft.

BREWSTER COUNTY — Green Valley Oil Corp.'s J. P. Wilson 1, sec 8, blk 212, pull cas 1860 ft.

COKE COUNTY—West Virginia Marketing Assn.'s J. R. Mims 1, dr 3025 ft.

CONCHO COUNTY — Dome Prod. Co.'s Mrs. Hartgrove 2, sd 1335 ft.

CROCKETT COUNTY—World Co.'s L. P. Powell 1, set 6¾ cas to test show oil and water, td 2647 ft. Crockett Drilling Synd.'s Massey 1, sd 1670 ft; J. M. Shannon 2, rig. Red Ball Oil Co.'s University 1, sec 5, blk 29, rig. Shaffer et al's University 1, sec 13, blk 47, lcn. J. C. Cook's (Wilcox O. & G. Co.) University 1, sec 14, blk 29, lcn.

CULBERSON COUNTY — The California Co.'s Watkins-Grisham 1, rig. Grisham et al's Grisham 1, rig.

JEFF DAVIS COUNTY—Bill Little et al's Denton 1, 15 miles W of Valentine, lcn.

GARZA COUNTY—Gulf Prod. Co.'s J. B. Slaughter 1, rig. Armeda Oil Co.'s J. M. Boren 1, sd 2443 ft; Connell 1, sd 600 ft. S. A. Sloan et al's Connell 1, rig.

IRION COUNTY—Chas. Denny et al's D. E. Hughes 1, dr 1455 ft. W. A. Stout et al's J. D. Sugg 1, sd 1830 ft.

KENT COUNTY—C. F. Greenwood & Marland Oil Co.'s J. E. Kuteman 1, sd repairs 2800 ft.

LOVING COUNTY—Rio Grande Oil Co.'s Sid Kyle 1, sec 12, blk 56, lcn. P-V Petroleum Co.'s Russell 1, dr 2620 ft.

MARTIN COUNTY — Humble Oil & Ref. Co.'s C. C. Slaughter 1, set 12½ cas 715 ft.

MITCHELL COUNTY — The California Co.'s Missouri State Life Fee 1, rig; Abrams 9, rig; Butler 2, rig; Morrison 13, dr oil pay 2980 ft; Womack 1, rig. Morrison-Thompson et al's Womack 1, rig. S. A. Sloan et al's Scott 1, dr 2015 ft; Sam Smart 6, dr 2940 ft; Smart 7, dr oil pay 3085 ft. Magnolia Pet. Co.'s W. H. Badgett 1, dr 550 ft; Mary Foster 1, spudding.

PECOS COUNTY—Gulf Prod. Co.'s White-Baker 1, sec 85, blk 194, sd 3065 ft.

PRESIDIO COUNTY—John Sward et al's (was Claude Byler) Toole 1, sd 900 ft.

REAGAN COUNTY — Big Lake Oil Co.'s University 17, dd, taking down rotary 2794 ft; University 20, C SW SW sec 25, blk 9, fsh 2500 ft; University 25, C SE SW sec 25, blk 9, dr 2890 ft; University 26, C SW SE sec 25, blk 9, dr 2572 ft; University 28, SW SE sec 25, blk 9, sd repairs 2610 ft; University 29, SE SE sec 25, blk 9, dr 2645 ft; University 35, SE SW sec 25, blk 9, dr 740 ft; University 36, SW SW sec 25, blk 9, dr 1130 ft; University 37, SE SE sec 12, blk 2, dr 970 ft; University 38, NE NE sec 1, blk 2, dr 1270 ft; University 39, NE NE sec 1, blk 2, dr 850 ft; University 41, dr 135 ft; University 42, SE NE sec 1, blk 2, dr 575 ft. The California Co.'s University 1, sec 13, blk 8, sr cas 4082 ft. B. H. Cogdell et al's University 1, sec 23, blk 8, dr 1960 ft. W. H. Dunning et al's J. D. Sugg 1, sec 185, T&P sur, blk 2, spd and sd, Pete Hoffman et al's University 2, NE NW sec 15, blk 11, lcn. H. B. McGuire et al's C. W. Merchant 1, sec 12, L. S. & V. Ry sur, blk "A", dr 3245 ft. Ben Simon et al's University 1, blk 11, lcn. J. T. Stover et al's University 1, sec 34, blk 11, sd 200 ft. Texon Oil & Land Co.'s University 11, C NE NW sec 36, blk 9, flowing 450 bbls oil fsh tools 2967 ft; University 12, C SE NW sec 36, fsh tools 2490 ft; University 13, C NE SW sec 36, dr 2600 ft; University 14, NW NW sec 36, fsh 2495 ft; University 15, NW NW sec 36, sd repairs 1945 ft; University 16, NW NW sec 36, dr 2265 ft; University 17, NE NW sec 36, dr 2140 ft; University 18, NE NW sec 36, dr 900 ft; University 19, dr 650 ft; University 20 to 25, inclusively, rigs. University Oil Co.'s University 1, sec 17, blk 10, sd litigation 2795 ft.

SCURRY COUNTY — Morrison-Thompson's Mary E. Towel 1, rig. Northwest Co.'s Newman 1, sec 115, H&TC sur, blk 97, rig.

STONEWALL COUNTY—Elder Nance et al's Ward 1, sd 2120 ft; J. M. Thomas 1, star machine.

STERLING COUNTY — Chicago-Texas Oil & Gas Co.'s D. C. Durham 1, sd 2250 ft; Durham 2, sd 1455 ft. Co-Operative Lease & Dev. Co.'s Douthitt 1, sd 2250 ft. George Northrup & Hall et al's I. L. Ellwood 1, dr 1530 ft. Kanawah-Angelo Oil Co.'s L. T. Clark 1, sd 1500 ft. Ford & Cogdell et al's W. L. Foster 1, sd 1820 ft. Pettit & Adkisson's C. C. Reynolds 1, dr 1810 ft. Harty et al's Reynolds 1, rig. C. J. Wrightsman et al's W. L. Foster 1, rig; G. R. Hull 1, (was Fidelity) sd 1865 ft.

UPTON COUNTY—Big Mesa Oil Co.'s University 1, sec 17, blk 3, sd 860 ft. Bell-Regan et al's University 1, sec 2, blk 4, sd with hfw 3306 ft. W. P. Morris et al's H. M. Halff 1, sd 445 ft. Suggs & Chancellor's University 1, sec 6, blk 4, spd and sd.

East Central Texas Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
Navarro County—		
Rowan-Edson & Peeples W. M. Warren 1, Bazette Dist.	*	3004
Bob Penn-W. C. Windsor et al G. L. Vinson 1, Bazette Dist.	*	3004
Hopkins County—		
Kellogg & Roxana Pet. Corp. Dollie Cork 1	*	3506

DRILLING REPORT

ANDERSON COUNTY—Roeser Pet. Co. et al's Brooks-Auld 2, rig; Turrentine 1, Richaland Reed sur, lcn.

BOWIE COUNTY — Daulby Springs Oil Co.'s Parkey 1, dr 3135 ft.

FALLS COUNTY — Harrison-Bletch & Thompson's B. & T. 1, sd titles 3320 ft. Reiter-Foster Oil Corp. et al's L. T. Williams 1, sd indefinitely 879 ft.

HENDERSON COUNTY—Fred Haynes et al's E. G. Bounds 1-A, H. Jeffreys sur, lcn.

HUNT COUNTY—Sam Tallal & C. A. Kelsey et al's J. W. Barnett 1, Alex Smith sur, sd 2046 ft.

KAUFMAN COUNTY—Cranfill-Lyles et al's Mrs. E. J. Massingill 1, Phillip Walker sur, elev. 463 ft, Austin chalk at 1933-2502 ft, coring cap rock 2988 ft.

LIMESTONE COUNTY—Hurdleston et al's Gill 1, sd 1240 ft. Leak et al's Stitt 1, sd 3070 ft. Magnolia Pet. Co.'s R. Kennedy 1, cemt. cas 2791 ft. Yoder et al's Saunders 1, lcn.

MILAM COUNTY—Magnolia Pet. Co.'s M. M. Kime 1, (S. P. Carson sur) Austin chalk 2440-2885 ft, dr hard lime 3180 ft.

NAVARRO COUNTY — Gilbert Johnson et al's J. W. Greer 1, Bazette Dist., dr 1850 ft. Prince & Vacuum Oil Co.'s S. M. Huggins 1, Bazette Dist., spudding. Elliott & Nicolle's D. J. Westbrook 1, Kerens Dist., dr 3635 ft. Barkley-Meadows et al's A. Hilburn 1, Currie-Richland Dist., Austin chalk at 2117-2560 ft; cemt. cas 2930 ft. W. A. Graves et al's V. H. Stubbs 1, Currie-Richland Dist., Austin chalk 3276-2580 ft, dr 2700 ft. E. L. Smith Oil Co.'s Moore 1, sd 650 ft. C. E. Holt et al's A. T. Madewell 1, SW of Richland, rig. King State Oil Co.'s J. W. Laird 1, NW of Wortham, top Austin chalk 1936 ft, sd for water 2240 ft.

ROCKWALL COUNTY — West-Johnson et al's J. S. Shook 1, S. S. McCurry sur, running 4½-inch cas 2650 ft.

Coastal Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
Jefferson County—		
Houston Oil Co. Sun Davis 2.....	*	1793
Warton County—		
Texas Co.'s Taylor 1	*	1500

DRILLING REPORT

BRAZORIA COUNTY—D. F. Bryan Prod. Co. & Hamm et al's Bryan 1, at Freeport, J. G. McNeel sur, dr 3818 ft.

BRAZOS COUNTY—Bryan Pet. Co.'s Watthuber 1, 2 miles S College Station, SD below 2400 ft.

FORT BEND COUNTY—Gulf Prod. Co.'s Moore 4, John M. Moore lease, dr 1390 ft. Marland Oil Co. of Texas' H. P. Lockwood 3, sec 3, C. D. Sayre sur, 200 ft to S and E lines, dr 302 ft; Meier 1, in Meier tract, dr 3148 ft; J. R. Spencer 1, T. Westfall sur, 900 ft to N and 650 ft to W line, dr 650 ft. Pathfinder Oil Co.'s T. F. Pinkney 1, Pinkney sur, 400 ft NE N cor sec 111, 300 ft NE of E cor sec 101, 1 mile E Davis & Co. 2, dr 3450 ft. James W. Rich et al's Moore-Hager 2, at Big Creek, 300 ft NE No. 1, SE side of dome, dk. Rycade Oil Corp.'s Flessner 1, 1000 ft S and 150 ft E of NW cor Diedrich-Flessner 200-acre tract, Diedrich sur, rigging up; Fritz Meier 1, 800 ft E of SW cor and 200 ft N of S line of Fritz Meier 207.7-acre tract, dr 2364; Moore 1, 3000 ft E and 5000 ft NW of SW cor of J. M. Moore 1564-acre tract, George Diedrich sur, dr 1910 ft. Texas Co.'s G. W. Armstrong 1, James Scott sur, 50 ft to N and W lines, rigging up.

GALVESTON COUNTY — Gulf Production Co.'s George E. Smith 3, at High Island, rigging up.

HARRIS COUNTY — Rycade Oil Corp.'s Parker 1, on Green's Bayou, dr 3545 ft. Texas Co.'s Warren 1, 3 miles S Hockley, 400 ft NE Staiti 17 and 10 degrees to E of line drawn

through Nos. 13, 15 and 17, dr 4150 ft; Warren 3, 750 ft NW No. 2, dr 2250 ft.

JACKSON COUNTY — Houston Oil Co.'s Rose & Sample 1, 7 miles W Edna, Rose & Sample tract, dr 2720 ft; Westhoff 1, 1650 ft N and 50 ft W of NE cor George Hecht 200-acre tract, Pedro Gallardo sur, dr 2645 ft. Jackson County Oil Synd.'s Seliner 1, 4 miles N Vanderbilt, C. W. Hall subdivision of Harwood Burns ranch, dr below 2720 ft.

JEFFERSON COUNTY — Gulf Prod. Co.'s E. Thomas A-1, at Fannette, near Hampshire, rigging up. Houston Oil Co.'s Pipkin 10, 934 ft S Pipkin 5, Pipkin sur, dr 3183 ft; Sun Davis 2, Seth Davis tract, 50 ft N No. 1, abn in anhydrite at 1793 ft; Fanny Crowe 1, Crowe land, 1550 ft N of S line and 150 ft E of W line of tract, lcn. Paggi Bros.' Wilson Hardware Co. 1, ¾ mile S Miller 1, dr below 2205 ft.

MATAGORDA COUNTY—Sheppard Mound Oil Co.'s Hawkins 2, offset to Marland's Murphy 1, 3000 ft E Commonwealth Oil Co.'s Hawkins 1, 1000 ft SE No. 3, dr 1400 ft.

WALKER COUNTY—Big Ridge Oil & Gas Co.'s No. 1, at Weiser's Bluff, 14 miles N. Huntsville, 12 miles W Riverside, Eastham sur, sd; No. 2, sd; No. 3, 8 miles SW No. 2, between Nelson Creek and South Bedias Creek, rigging up.

WARTON COUNTY—Gulf Prod. Co.'s Felder 3, 20 ft to W and 1735 ft to N line blk 3, S. Ingram sur, dr 4394 ft. Texas Co.'s Taylor 1, abn below 1500 ft in anhydrite; Taylor 2, at Boling, 1100 ft SE No. 1, rigging up.

San Antonio District Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
Jim Hogg County—		
Henne, Winch & Farriss' Martinez 2	300	....

DRILLING REPORT

BEXAR COUNTY — Humble Oil & Ref. Co.'s N. C. Cassin 1, dr; Menchaca 1, dk.

BASTROP COUNTY — Cardinal Oil Co.'s No. 1, dr below 3250 ft. Paton's Glover 1, sd 950 ft for water. Reiter & Foster's Millie Hicks 1, sd for water at 2000 ft. Jake Jarmon's Watkins 1, sd for water.

DUVAL COUNTY — Co-Operative Drilling Co.'s Dinn 1, sd 2070 ft. Associated Oil Co.'s, Sutherland 1, lcn. Mesquite Oil Co.'s No. 1, setting liner. Booth Interests' W. R. Peters ranch 1, lcn. O. W. Killam's Benavides 3, dr 2480 ft in sticky shale ; 4, dr 1400 ft in gumbo. Humble Oil & Ref. Co.'s Pusch 1, dr 2290 ft in sticky shale. United States Gas & Oil Co.'s Peters ranch 3, rigging up.

GUADALUPE COUNTY — L. K. Hughes Dev. Co.'s Allen 20, no report. Allen Burman's Bailey 1, dr 1710 ft. Magnolia Oil Co.'s Nos. 13 and 14, dr. Jennings et al's Vogel 1, dr 1230 ft in Taylor Marle. Stebbins Oil & Gasoline Co.'s Lenz 1, dk. McClannahan's Herman Lenz 1, dr below 1070 ft. Roxana Pet. Co.'s Herman Schmidt 1, dk. Joe Dunning et al's Hugo Vetter 1, dr. J. M. Davis et al's Koch 1, no report; Augusta Hoese 1, spudded in. Scrivner et al's Henry Shuler 1, dk; Vetter 1, no report. York Creek Oil Co.'s Fulshear 1, no report.

JIM HOGG COUNTY — Buchanan-Plateau Oil Co.'s No. 4, set casing. Rydal-Rycade Oil Co.'s W. P. Allen 1, sur 21, dr 2190 ft in hard shale. Simms Oil Co.'s Wood 1, sur 84, dr. J. W. Pippin et al's Palacious 2, sd 1305 ft for supplies. Plateau Oil Co.'s Martinez 5, sd 2066 ft. Daniels & English's No. 1, blk 8, sur 1617, dr. Buchanan et al's No. 4, dr below 1800 ft. Big Bend Oil Co.'s Martinez 5, cemented 6⅝-inch cas at 2030 ft; Martinez 6, dr below 1050 ft. Russell-Hoffman's David Vela ranch 1, dk; Givens 1, rigging up. Mirando Oil Co.'s No. 11, set casing at 2048 ft. San-Tex Oil Co.'s No. 1, sur 262, dr below 1200 ft. Texo Oil Co.'s Lopez 4, dr 1978 ft. Henne-Winch-Farriss' Martinez 2, flowing 300 bbls; Martinez 3 and 4, dks. Weber Oil Co.'s Holbein 4, sd 3486 ft. Plateau-Wheat's Nos. 3, dk; 4 and 5, lcns. O. W. Killam's Vela 1, sd 2103 ft. Plateau-Texas-Pacific's Nos. 5, dr; 6, set casing at 2002 ft. Elliott-Texas-Pacific's No. 2, dr below 2280 ft.

LIVE OAK COUNTY—Grubstake Investment Assn.'s Nichols 3, no report. Glasscock & Fallin's Charles Tips 1, dr. Southern Natural Gas Co.'s Nos. 9, dr; 10, lcn. Coquet et al's Hicks 1, dr. Ross-Segunda Oil Co.'s No. 3, sur 2253, dr.

ZAPATA COUNTY — H. J. McMullen's Serapio Vela 1, 2 and 3, lcns. R. K. Bateman et al's No. 1, sur 617, dr. Texas Co.'s Cuellar 1, lcn; Jennings 1, rigging up.

Arkansas Wildcats

COMPLETIONS

La Fayette County—		
Humble Oil & Ref. Co.'s Bodcau-Riggens 2, 30-15-22	*	1323
Miller County—		
Humble Oil & Ref. Co.'s Bishop 1, 19-16-27	*	1316
Ouachita County—		
Lown et al's (Jimmie Cox) Burton 2, 30-15-17	*	2356
Union County—		
Berry et al's Union Saw Mill Co. 1, 14-19-11	*	1770
Coates & Sowell's Springer 1, 36-17-16	*	2944

DRILLING

BRADLEY COUNTY—Rhodes et al's McQuistian 1, 36-12-8, sd 255 ft. The Texas Co.'s Saline Lumber Co. 1, 11-16-10, rig.

CALHOUN COUNTY — Klotz & Thomas' Forest City Box Co. 1, 14-16-14, set 12½-inch 600 ft. Murdock et al's Eagle Mills 1, 29-12-15, dr 1610 ft.

COLUMBIA COUNTY—Arkansas Fuel Oil Co.'s Longino-Goode 1, 14-18-20, to resume dr 828 ft. Greeson et al's Pearce 1, 3-18-10, sd 20 ft. Magnolia Pet. Co.'s Hammond 1, 25-15-20, dr 1010 ft. Meier et al's Gantt 1, 15-17-22, dk. Phillips et al's Davis 1, 14-18-21, r 2755 ft. Pluto Oil Co.'s Dickens 1, 20-18-22, dk; Robinson-2, 23-18-23, coring 100 ft. Wingfield & Mitchell's Bodcau Lumber 1, 4-20-21, sd 2024 ft.

DREW COUNTY—Graves et al's Karnes 1, 10-13-6, dr 2675 ft. McClintock et al's Ogle 1, 35-13-5, set 10-inch 200 ft. Spooner et al's Meyer 1, 4-16-17, sd 50 ft.

HEMPSTEAD COUNTY—Grassy Lake Oil Assn.'s Gun Club 1, 27-12-27, sd 2100 ft. Zingg et al's Sutton 1, 9-11-23, sd 200 ft.

LA FAYETTE COUNTY—Estes & Oliver's Bodcau 1, 13-18-24, dr 1015 ft. Ken-Saw Pet. Co.'s Red River Valley 2, 3-20-24, dr 2090 ft. Wetherbee et al's Jeffus 1, 8-19-23, dr 3035 ft.

LITTLE RIVER COUNTY—Grote et al's Allen 1, 2-13-29, ur 2780 ft. Johnson et al's Hawkins 1, 10-11-31, sd 1350 ft.

MILLER COUNTY—Caplan et al's Wiseman 1, 36-15-27, to set 10-inch 400 ft. Davidson et al's Faulk 1, 27-17-27, dk timbers. Humble O. & R. Co.'s Munn Land Co. 1, 22-16-26, dr 995 ft.

NEVADA COUNTY—Falcon Drilling Co.'s Weaver 1, 6-13-21, dk. Greeson et al's Ellis 1, 2-15-21, rig; Waters 1, 2-14-21, co 1216 ft, gas oil and sw. Humble O. & R. Co.'s Taylor 1, 11-15-22, rig. White et al's Hamilton 1, 34-14-22, dr 120 ft.

QUACHITA COUNTY — Buffalo Oil Co.'s Morgan 1, 22-15-19, dr 1780 ft. Gilliand Oil Co.'s Marr B-5, 30-15-16, Louann deep test, coring 2747 ft. Jones et al's Wilson 1, 26-15-18, set 6¾-inch 2234 ft. C. W. Robinson's Polk 1, 16-15-19, dr 1820 ft.

UNION COUNTY—Liberty Oil Co.'s Davis 1, 31-16-14, dr 2770 ft. Magnolia Pet. Co.'s Chandler 1, 4-19-14, sd 2675 ft. Ward et al's Goodwin 1, 16-16-14, sdtr 2580 ft.

Oklahoma Wildcats

ALFALFA COUNTY—McGinnis & Ward's Watts 1, C SE NE SW 21-27-10w, sd 3504 ft.

ATOKA COUNTY—Henson et al's Dabney 1, C SE NW 17-4-11, dr 3465 ft. Wapanucka Dev. Co.'s Underwood 1, S W L SE SE 28-2-9, sd 1343 ft.

BLAINE COUNTY—Mayers et al's Chronister 1, SEc NW NW 7-18-15w, sd 965 ft. Okomo Oil Co.'s Ekleman 1, SEc 21-15-10w, sd 2610 ft.

BRYAN COUNTY—Alexander's Hampton 1, SEc NE 26-7-11, sd 1400 ft.

CANADIAN COUNTY — Thos. Revelle's Dawson 1, C SE SE NW 20-26-9w, sd 3065 ft. Carrol et al's Setter 1, SEc 2-13-8w, sd 100 ft. C. D. Jones et al's Sanders 1, C NE NE NE 29-11-7w, sd 980 ft.

CLEVELAND COUNTY — Garr Oil Co.'s Holland 1, NEc SE 31-10-4, sd 2620 ft.

GRANT COUNTY—Embry et al's Edwards 1, C SE SE NW 20-26-4, sd 1000 ft. Midwest & Gulf's Moon 1, NEc NW 8-27-8w, sd 2490 ft. Frank Travers et al's Fuss 1, SWc NW NW 3-27-4w, sd 1250 ft.

HUGHES COUNTY — Mathers & Skelly's McClain 1, C SW SW 4-5-11, sd 3026 ft. Walton, Snyder & Marshall's King 1, C E L NE NW 6-6-10, fsh 3675 ft. Atkins et al's Sewell 1, C SE SW SW 14-7-9, dr 1400 ft. Parmenter et al's Stewart 1, C SW SE 11-5-8, rig. Henry Greis & Kerr's Pearson 1, C SE NE NE 30-5-10, rig.

JEFFERSON COUNTY—Barker et al's Major 1, C SE SW 34-5-6w, spd and sd. Godley Oil Co.'s Woodworth 1, C NE NW 36-3-4w, sd 1765 ft. Pauline O. & R. Co.'s Graver 1, C NE SW 17-5-8w, dr 300 ft. Pure Oil Co.'s Howard 1, SWc NE 25-4-11w, dr 365 ft.

KAY COUNTY — Hickman & Barnhard's Sheets 1, C NW SW SE 25-22-2w, fsh 997 ft.

KIOWA COUNTY — Connor et al's No. 2, NEc NW NW 34-7-16w, run cas 1200 ft. Alcorn Oil Co.'s No. 1, NEc SE SE SW 13-7-16w, r 9982 ft. C. E. Reynolds' Smart 1, C E½ SE 12-6-17w, lcn.

LINCOLN COUNTY — P. & R. Corp.'s Hanzig 1, NWc SW 14-13-6, dr 510 ft. Douglas Oil Co.'s Ewing 1, NEc 7-13-3, dr 2240 ft. Eugene Coste & Co.'s Ross-Fortune 1, SEc NW 26-12-2, fsh 3813 ft. Wilcox O. & G. Co.'s Smith 1, SEc NW NE 12-12-3, dr 4100 ft. F. O. Howarths Harris 1, SEc NE 22-15-2, fsh 4125 ft. Santrock Drilling Co.'s No. 1, SEc NW 17-15-3, sd 920 ft. Ruby et al's Cull 1, NEc NW 36-15-4, fsh 3705 ft.

LOGAN COUNTY—Skelly Oil Co.'s Newman 1, NWc NW 32-19-3w, sd 2500 ft. Franklin Oil Assn.'s Moore 1, NWc SE SE 35-7-4w, dr 2310 ft. McMunn & Nixon's Field 1, SWc NE SE 35-7-4w, rig. Haley & Pioneer Pet. Co.'s Quair 1, SWc SE 33-19-3w, dr 260 ft. Blackford O. & G. Co.'s Lair 1, C S L N½ SE 28-16-1w, dr 1290 ft. Magnolia Pet. Co.'s Prichard 1, NWc 23-15-1e, dr 3715 ft.

LOVE COUNTY — Drillers Syndicate Oil Co.'s Wilson 1, NWc SE 11-7-2, sd 2830 ft. Magnolia Pet. Co.'s Crowe 1, C NE NE Sec 13-8-2, dr 2253 ft. Smyer & Stein's Gray, C SE SE 12-9-1, rig. Jackson & Askew's Havenkamp 1, C SW SW NW 27-7-2, rig.

MAJOR COUNTY — Texas Prod. Oil Co.'s Basin 1, SWc 6-22-14w, sd 200 ft. Franz & Slick's Gray 1, C NW 36-21-11w, sd 1000 ft.

PONTOTOC COUNTY—Highland Oil Co.'s Hatcher 1, C NW SW 4-4-5, fsh 2285 ft. Galloway et al's Hays 1, NEc SE NW SW 13-3-6, sd 1160 ft. Dixie Oil Co.'s Moran 1, SW SW NE 33-2-4, lcn.

POTTAWATOMIE COUNTY — Ossie Oil Co.'s Howell 1, SWc NE 17-10-2, sd 3370 ft. The Texas Co.'s Allenbaugh 1, SEc SW 3-11-6, dr 750 ft. Davie Detrick's McGathey 1, SEc 10-6-2, sd 3850 ft. H. C. Gwinnup's Floyd 1, SW SE 12-11-3, sd 3655 ft. Pierce Oil Corp.'s Magett 1, NWc 25-10-4, sd 460 ft. McMann Oil Co.'s Heghan 1, SWc NW 19-7-4, sd 100 ft. Halmond Osmond et al's Fiddler 1, SEc NW 4-5-5, sd 545 ft. Central National Oil Co.'s Toney 1, C SW SW SW 28-10-4, r 750 ft.

ROGER MILLS COUNTY—Twin Hills Oil Co.'s McClure 1, NWc 15-16-26w, sd 4310 ft. Trio Oil Co.'s No. 1, SEc NW SW 3-13-26w, sd 3200 ft.

SEMINOLE COUNTY—Maxwell & Carty's Christie 1, C NE NW 33-6-6, sd 3000 ft. Link Oil Co.'s aroline 1, C SE NW 14-6-7, sd 2840 ft. Wm. McDougal's Belle Dindy 1, C SE SE 30-6-7, sd 3450 ft. R. F. Garland's Farlin 1, C NE NW 6-6-8, sd 1390 ft. Central National Oil Co.'s Harjo 1, C NE SW NE 14-11-7, run cas 3540 ft, hfw. Transcontinental Oil Co.'s Davis 1, NE SE 22-7-7, fsh 3325 ft. Bryan Bros.' Walker 1, C SE SE SE 4-7-6, dr 1135 ft. Riverside & Kinney's Nitley 1, C S½ NE SE 24-5-5, rig.

WOODS COUNTY — Victor Oil Co.'s Van

Buskirk 1, SWc SE 10-25-15w, sd 960 ft.

WASHITA COUNTY—Meridian Pet. Co.'s No. 1, SE SE SE 14-9-15w, lcn.

Kansas Wildcats

BARBER COUNTY—R. B. Brown's No. 1, NWc 14-34-11w, dr 1850 ft.

BARTON COUNTY — Cheyenne Oil Co.'s Sooy 1, SWc SW 27-18-12w, dr 4105 ft. Haynes et al's Taul 1, NWc 21-12-12w, sd 2100 ft. John. Herron's No. 1, SEc NE 22-18-13w, dr 4025 ft. Huffine et al's Smith 1, C NE SW 21-19-12w, dr 1550 ft.

CLARK COUNTY—Watchorn O. & G. Co.'s Morrison 1, SEc NE NE 20-32-21w, sd 5300 ft.

CLOUD COUNTY — Livingston's Murdock 1, SEc 6-6-4w, dr 450 ft.

GEARY COUNTY — Liberty-Texas' Wright 1, NEc 9-12-6, sd 750 ft. Liberty-Texas Oil Co.'s Foster 1, NEc SW 3-12-6, sd 2000 ft.

GRAHAM COUNTY—Keyes Bros. & Marine's Thaxton 1, SEc NW 23-8-24w, sd 1000 ft. Gruen & Shiler's Baker 1, NWc SE NW 17-10-24w, rig.

JEFFERSON COUNTY — Northern Counties' Edwards 1, SEc NW NW 13-8-9, sd 3405 ft.

KINGMAN COUNTY—Hale et al's Graber 1, SWc NW 34-27-7w, sd 3024 ft.

LABETTE COUNTY—Ark. Fuel Oil Co.'s Sparks 1, NEc SE SE 14-31-17, sd 1000 ft.

LINCOLN COUNTY—Equite Oil Co.'s Jellison, NWc SE 19-13-9w, dr 3110 ft. Scott & Collins' Stone 1, SEc SW NE 19-11-6w, no report.

MARION COUNTY — Leonard Pet. Co.'s Whaler 1, SEc NE NW 23-19-4, dr 1245 ft.

MITCHELL COUNTY—Wilcox Oil & Gas Co.'s Elders 1, NWc SW NW 23-6-9w, dr 3250 ft.

NEMAHA COUNTY — Nemaha O. & G. Co.'s Meyers 1, NWc 19-3-11, sd 3250 ft.

OSAGE COUNTY—Rodgers & Bittle's Bertha 1, SEc NW 22-17-16, lcn. Mul-Vit Dev. Co.'s Neil 1, NEc NW SW NE 8-17-17, sd 2735 ft. Baker et al's No. 1, C SE SE 3-15-15, sd 260 ft.

RICE COUNTY—Stamey's Barnes 1, SEc NE 21-20-6w, dr 3640 ft. Jasper & Beschka's Walker 1, SWc NE 10-18-6w, co 2200 ft.

RILEY COUNTY—Pawnee O. & G. Co.'s Marks 1, SEc NE NW 26-10-6, sd 2030 ft.

ROOKS COUNTY—Keyes Pet. Co.'s Sandon 1, NWc SW SE 7-8-20w, spd and sd. C. Findeiss et al's Minx, SWc 25-10-19w. dr 1625 ft.

SALINE COUNTY—Thrall et al's No. 1, SEc NE NW 15-15-4w, sd 1010 ft.

SEDGWICK COUNTY — J. H. Liggett's Funk 1, NEc NW 11-26-1, sd 3020 ft, show oil.

L. E. Craig et al's Mean 1, NWc NW 26-28-1w, dr 3520 ft. Curtis et al's Duncan 1, SEc NW NW 19-29-1w, lcn. Allison & Fitzwilliams' Webb 1, C NE 21-29-3w, spd and sd.

SEWARD COUNTY — C. T. Dev. Co.'s Woods 1, NWc NE 34-34-34w, sd 700 ft. Seward O. & G. Co.'s Selsey 1, NEc NW 2-33-33, gas at 2785 ft.

SUMNER COUNTY — The Texas Co.'s Nixon 1, SWc SE SE 12-35-1, run cas 807 ft. Foster et al's French 1, NWc 13-31-2, lcn. Phillips Pet. Co.'s Armspiger 1, NWc 17-34-1, r 4075 ft. Wilcox O. & G. Co.'s Stayton 1, NWc SW 5-32-2w, r 3000 ft.

TREGO COUNTY—Keyes Pet. Co.'s Davis 1, NEc SW 16-11-24w, sd 3030 ft. Keyes Pet. Co.'s Walsh 1, NWc SE 5-11-25w, sd 1450 ft; Walsh 2, SWc SE SW 5-11-25w, sd 1550 ft.

WABAUNSEE COUNTY—Williams et al's No. 1, NEc SW 15-13-12, sd 3600 ft.

WILSON COUNTY — Rhodes & French's Brown 1, NWc SW NW 2-27-14, dr 980 ft.

WOODSON COUNTY—Mathews et al's Jeffers 1, NWc SE 36-26-15, lcn. Dave Alter et al's Hunt 1, NWc SW 13-25-14, dr 700 ft. Harris et al's Greese 1, NWc SE 35-25-12, lcn.

Louisiana Wildcats

COMPLETIONS

Company, Well and Location	Initial Production Bbls.	Depth
De Soto Parish—		
Daniels & Roscoe's Pollack 1, 36-11-14 . .	*	3230
La Salle Parish—		
Columbia Oil & Gas Co.s Urania Lumber Co. 2, 16-10-2e . .	*	1625
Gulf Ref. Co.'s Urania Lumber Co. A-1, 22-10-2e . .	*	3025
Lincoln Parish—		
Gulf Ref. Co.'s Dudley 1, 4-18-4w..	*	2910
Union Parish—		
Jones & Walker Oil Co.'s Feazel 1, 6-19-2e . .	*	2558
Webster Parish—		
McDowell et al's Hortman 1, 15-20-10 . .	*	2525

DRILLING

BIENVILLE PARISH—Evans & Brown's Miles 1, 20-18-7, dr 100 ft.

BOSSIER PARISH—Coker et al's Rhodes 1, 31-21-11, set 12½-inch 130 ft. Corbett et al's Murff 1, 18-17-11, dk. Kendrick et al's Webster 1, 9-18-11, dk. Osborne et al's McDade 2, 32-19-11, sd 780 ft. Wilder & Cushman's Lewiston 1, 13-16-12, dr 300 ft.

CADDO PARISH—Dixie Oil Co.'s Dillion 53, 13-21-15, set 6-inch 3575 ft; Jolly 1, 21-22-15, dr 2815 ft. Flournoy et al's Simpson 1, 8-16-15, dr 2175 ft. Foruna Oil Co.'s Levee Board 2, 8-20-15, dr 2865 ft; Mitchell 1, 17-18-16, dr 2825 ft. Haynes Bros.' Louisiana L. S. & P. 1, 8-19-16, sd 2753 ft. Henderson et al's Caldwell 1, 29-22-15, rig. Ridge Oil Corp.'s Williams 1, 3-15-15, dk. R. O. Roy's Hutchinson 1, 34-16-12, set 10-inch 828 ft. Stith et al's Pitts 1, 11-23-16, sd 600 ft. The Texas Co.'s Jeems Bayou 1, 15-20-16, sd 3506 ft. Woodley & Collins' McVea 1, 23-19-14, sd 2580 ft.

CALDWELL PARISH — Buckner et al's Vinson 1, 33-12-4e, dk.

CLAIBORNE PARISH — Claiborne-Lincoln Synd.'s Fields 3, 22-19-5, sd 2645 ft. Clark & Melat's Heard 1, 5-21-6, set 8-inch 2120 ft. Collins & Woodley's McDonald 1, 26-21-5, set 12½-inch 100 ft. Evans & McMurphy's Taylor 2, 5-19-5, dk. Triangle Drilling Co.'s Cox 1, 7-19-5, hot sw 2701 ft, dr 2710 ft.

DE SOTO PARISH — Fortuna Oil Co.'s Alexander 1, 32-12-15, dr 2480 ft; Bishop-Robinson (Ulrey) 1, 22-11-12, wosr 2992 ft. Tarver et al's Willett 1, 1-14-10, rig. Ulrey et al's Scott 1, 21-11-12, set 10-inch 153 ft.

GRANT PARISH—Finn Construction Co.'s Ball 3, 14-7-1w, dr 1560 ft.

JACKSON PARISH — Big Chief Oil Co.'s Rymes 1, 13-14-4w, sd 2147 ft.

LA SALLE PARISH — Alexandria-Urania Oil Co.'s State 1, 26-10-1e, dk timbers. Davis et al's Russell 1, 24-10-1e, dk. Ford et al's Tullos 1, 23-10-1e, set 6-inch 1512 ft. Gould & Monroe Drilling Co.'s Harper 1, 23-10-1e, trying to cut off salt water, 1496 ft. Heard et al's Boyd 1, 28-11-2e, dk. Helm & Burch's Urania 1, 28-11-2e, sd 1393 ft. Imperial O. & G. Co.'s Urania 1, 10-10-1e, sd 420 ft. Jones & Haywood's Kees 1, 7-10-3e, dk. Love et al's Tremont Lumber Co. 1, 30-10-1e, dk. Mitchell et al's Rich 1, 25-8-4, dk. Bill Rowe's Hardtner 1, 19-10-2e, to test 990 ft. Wright et al's Love 1, 16-11-2e, dk. Zeigen et al's Hardtner 1, 19-10-2e, dr 1550 ft.

LINCOLN PARISH—Ruston Drilling Co.'s Richardson 1, 7-18-2w, sd 1100 ft.

OUACHITA PARISH — Dickson & Frue's Goodwin 1, 24-18-2e, sw 2860 ft. Palmer Corp.'s (White) Jones 1, 6-16-5e, to resume dr 2350 ft.

SABINE PARISH—Emlet et al's Bowman-Hicks 4, 8-7-12, sdtr 2350 ft; Bowman-Hicks 5, 9-8-12, abn 2633 ft.

WEBSTER PARISH — Fortuna Oil Co.'s (Stack & Egger) Bible 1, 8-20-9, fsh 2180 ft. Kinnedy et al's Ambrose 1, 19-20-10, sd 415 ft. Palmer Corp.'s Davis 1, Cotton Valley deep test, 23-21-10, dr 1060 ft.

WINN PARISH—Hall et al's Nagle 1, 6-10-2w, sd 390 ft. Ohio Oil Co.'s Rowland 1, 5-12-1w, rig.

PERMITS GRANTED FOR NEW WELLS

Weekly Comparison of New Wells

Following is a condensed table giving a comparison of permits or locations made for new wells in Kansas, Oklahoma, Arkansas, Louisiana, Texas and California:

Number of Wells for Week Ending

	Feb. 20	Feb. 27	Mar. 6	Mar. 13	Mar. 20	Mar. 27	April 3	April 10	April 17	April 24	May 1	May 8	May 15	May 22	May 29	June 5
Kansas .	29	24	82	24	36	55	34	23	37	38	26	32	32	27	29	44
Oklahoma	96	108	100	94	94	73	115	107	96	82	81	86	94	95	114	106
Arkansas	21	31	30	67	55	80	54	55	34	64	60	49	31	77	62	67
Louisiana	20	14	9	14	14	14	4	9	14	20	7	10	7	12	8	16
Texas . .	207	133	189	210	218	198	187	214	213	215	147	144	208	130	167	221
California	18	27	12	40	24	36	42	26	28	40	27	26	34	29	33	24
Total .	391	337	422	449	441	456	436	434	422	459	348	347	406	370	413	478

KANSAS

Butler County—Empire Gas & Fuel Co.'s No. 26 Finney, southwest corner of 20-25-5; No. 26 Murray, northeast corner of 30-25-5. Travis et al's No. 5 Knutson, center of the northeast of the northwest of 11-27-5. Baron, Setrin et al's No. 6 Smock, center of the southeast of the northwest of 2-27-5.

Chautauqua County—Mid-Kansas Oil & Gas Co.'s No. 1 Westerfield, northwest corner of the southwest of 3-32-8. John Croft et al's No. 1 McAlister, northwest corner of the northeast of the northeast of 28-32-10.

Cowley County—Shawver & Sutter's No. 4 Newton, southwest corner of the northwest of the northeast of 15-30-4. Lewis Oil Co.'s No. 5 Robbins, southeast corner of the northwest of

the southwest of 31-30-6. C. E. Roth & Co.'s No. 6 Hanna, northwest corner of the northeast of the northwest of the northeast of 4-30-8. Arkansas Fuel Oil Co.'s No. 2 Clark, southwest corner of the northwest of 11-31-3. Southwestern Gas Co.'s No. 1 Harris, northwest corner of the southwest of 17-31-6. Carter Oil Co.'s No. 6 Waite, northeast of the northwest of the southeast of 19-32-3. J. A. Hull Co.'s No. 9 Wallace, northeast corner of the southeast of the northwest of the southeast of 24-32-4. Southwestern Pet. Co.'s No. 1 Shields, southeast corner of the northeast of 18-32-6. Marland Oil Co.'s No. 3 "A" Graham, southeast corner of the northeast of 9-33-3; No. 7 Brewer, southeast corner of the northwest of 10-33-3; No. 1 Hunt, southeast corner of the southwest of the southeast of the northwest of 21-33-3. Gypsy Oil Co.'s No. 1 Hunt, center of the north line of 21-33-3. McKnab et al's No. 1 Sawyer, southeast corner of lot 27, section 18-33-8.

Elk County—Theta Oil Co.'s No. 1 Weirman, center of the southeast of the southeast of 34-29-12. York State Oil Co.'s No. 1 Fleek, northeast corner of the southwest of 21-30-11. Watchorn Oil & Gas Co.'s No. 1 McGlasson, southwest corner of the northeast of 11-31-9. Gleiman & King's No. 1 Crowthers, southeast corner of the northwest of 28-31-9.

Greenwood County—Allen et al's No. 4 Kipfer, northwest corner of the southwest of the northeast of 13-22-10. White Eagle Oil & Ref. Co.'s No. 3 Kipfer, southwest corner of the northwest of the northeast of 13-22-10. White Eagle's No. 4 Kipfer, northeast of the northwest of the northeast of 13-22-10. Empire Gas & Fuel Co.'s No. 3 Kipfer, northeast corner of the southeast of 11-22-11. National Refining Co.'s No. 9 Wick, southwest corner of the southeast of the northwest of the northeast of 27-22-11. Greenland Oil Co.'s No. 4 "B" Shambaugh, northwest corner of the northeast of 2-23-9; No. 2 "C" Shambaugh, southwest corner of the northeast of the northwest of 2-23-9; No. 3 "C" Shambaugh, northwest corner of 2-23-9. No. 7 Green, southeast corner of the northeast of the northeast of 10-23-9; No. 8 Green, northwest corner of the northeast of the northeast of 10-23-9; No. 9 Green, southwest corner of the northeast of the southeast of 10-23-9. Skelly & Emerald's No. 4 Teeter, southwest corner of the northeast of 15-23-9; No. 1 Teeter, northwest corner of the southeast of 15-23-9. Empire Gas & Fuel Co.'s No. 25 Teeter, southwest corner of the northwest of the southeast of 16-23-9; No. 26 Teeter, southwest corner of the northwest of the northwest of the southwest of 16-23-9. Fisher Oil Co.'s No. 1 Wilson, northwest corner of 27-25-11. Gwlinnup et al's No. 1 Baker, southwest corner of the northeast of 8-26-13. Lynds et al's No. 1 Nelson, northeast corner of the southeast of 3-28-8.

Harvey County—Phillips Pet. Co.'s No. 1 Seeley, southwest corner of 13-23-2.

Russell County—Midwest Refining Co.'s No. 31 Abbott, southwest corner of the southeast of 29-11-15w.

Woodson County—Iowa-Kansas Development Co.'s No. 1 Reed, northwest corner of the southeast of 26-23-14.

OKLAHOMA

Kay County—Comar Oil Co. of Tulsa, No. 1 Bixby, SWc NW SE NW 29-29-1w. Marland Oil Co. of Ponca City, No. 1 Schooland, C SW NW NW 16-29-1e; No. 1 Schooland, C NW NW SE 16-29-1e. Herbert Oil Co. of Ft. Worth, Texas, No. 2 Townsite, SWc SE SW 5-28-2w. Carter Oil Co. of Tulsa, No. 1 Thomas, C SW NE SW 15-25-2w; No. 2 Thomas, C SW SE SW 15-25-2w; No. 3 Thomas, C NW SE SW SW 15-25-2w; No. 4 Thomas, C NE NE SW 15-25-2w. Marland Oil Co. No. 1-A Thomas, twin, NWc 15-25-2w; No. 4 Thomas, C NW SW SW 16-25-2w; No. 3 McFarland, C NE SE SE 16-25-2w; No. 1 Birdsell, C NW NW NE 22-25-2w. Twin States Oil Co. of Tulsa, No. 4 Siler, twin, NWc 22-25-2w; No. 5 Siler, C NW SW NW 22-25-2; No. 6 Siler, C NW NE NW 22-25-2w.

Garfield County—Sinclair Oil & Gas Co. of Tulsa, No. 18 Walker, C SE NE NE 13-22-4w (now completed). Magnolia Pet. Co. of Dallas, Texas, No. 2 Searcy, C NE NE NE 15-22-4w.

Osage County—F. A. Gillespie of Tulsa, No. 26, NW NE NW NE 8-20-12. Gled Oil Co. & Grimes of Tulsa, No. 67, NW SW NW NW 11-20-12. Continental Oil Co. (Mutual) of Denver, Colo., No. 2, NE NW NE SW 28-20-12. Mid-Co. Oil Co. of Tulsa, No. 2, C SE NW SW 24-21-8. Barnsdall Oil Co. of Tulsa, No. 6, C N L NE 10-21-9. Sterling Oil Co. of Tulsa, No. 12, C S L N½ S½ NW 1-21-11. Elliott & Smith, No. 8, NW SE NW NW 30-21-12. Plymouth Oil Co. of Tulsa, No. 3, SE NW NW 30-21-12. Knupp et al, No. 1, NW NE 28-22-10. Peters Pet. Corp. of Tulsa, No. 33, SE NW 13-23-8. Beacon Oil Co. of Bartlesville, No. 15, C S L NW 21-23-8. Tidal-Osage Oil Co. of Tulsa, No. 5, C NE SE SE 26-24-9. Winona Oil Co. of Tulsa, No. 13, C S L N½ S½ SE 28-24-10. Friedman et al's of Tulsa, No. 4, NE SE NE NW 12-24-11. Beacon Oil Co. of Bartlesville, No. 1 SW NW NW 16-25-10. Phillips Pet. Co. of Bartlesville, No. 11, C SW NE NW 12-27-5. Phillips No. 12, C SE NE NW 12-27-5; Phillips No. 15, C NW NE NW 12-27-5. Winona Oil Co. No. 2, SE NW 18-27-12. Owen-Osage of Pawhuska, No. 329, SE NW NE 36-28-10; Owen-Osage, Unknown, SE SW SE SW 8-27-10. Beacon Oil Co. No. 10, NW NE NW NE 33-28-11. Howard Duffield of Tulsa, No. 6, NW SE NW NE 28-28-11. Wah Sha She Oil Co. of Bartlesville, No. 49, SW NE SW 15-29-9. Beacon Oil Co. No. 15, C S L SE 27-29-11.

Wagoner County—T. A. Johnson & Co. of Okmulgee, No. 1 A. Drew, SEc NE 26-18-15.

Muskogee County—J. A. Shepard No. 1 Peters, SWc NW SW 26-13-16.

Okmulgee County—Mid-Continent Pet. Corp. of Tulsa, (Cosden) No. 14 M. Alexander, SEc NW 12-13-13 (old well deepening). Hutchinson et al, No. 6 L. Berryhill, SEc SW NW 20-14-13. Sheridan Oil Co. of Tulsa, No. 1 Hudson, NEc NW 33-16-11. Sheridan-Houston Oil Co. and others, No. 1 A. Hutchinson, NEc SW 27-16-12. E. P. Harwell of Tulsa, No. 1 Escol, SEc NE NW 1-15-12. E. R. Black of Okmulgee, No. 2 Sands, twin, SEc SW SE 28-13-11. Sands Pet. Co. of Okmulgee, No. 1 Betts, SEc SW SE 19-12-14, (old well deepening). Sterling Oil Co. of Tulsa, No. 1S, Barnett, SEc SE 19-12-14, (old well deepening). Roudebush No. 1 Hawkins, SWc NW 20-12-14 (old well deepening). W. B. Pine of Okmulgee, No. 3 J. Shepard, SWc NW NW 29-12-14 (old well deepening) Sterling Oil Co. No. 4 J. Shepard, NWc SW NW 29-12-14 (old well deepening).

Okfuskee County—Josey Oil Co. of Tulsa, No. 2 Hulsey, C E L SE NE 32-12-11. Jennings et al, No. 1 Barnett, C SW SE SW 33-10-9. Amerada Pet. Corp. of Tulsa, No. 6 Harjo, C SW NW SW 36-10-9; No. 2 Dacon, C SW NW SE 36-10-9.

Seminole County—Gypsy Oil Co. & Laurel of Tulsa, No. 2 E. Williams, C NE NW NE 5-10-8. Holm & Jarvis of Tulsa, No. 1 Lucinda, C NE NW SW 14-11-8. Southwestern Pet. Co. of Tulsa, No. 1 Frank, C NW NE SW 14-11-8; No. 3 B. Lena, C SW SE NW 14-11-8. Gardner Pet. Co. of Tulsa, No. 1 Lucinda, C NE NW SW 14-11-8. Mid-Continent Pet. Corp. of Tulsa, No. 1 Fixico, C NE NE 15-11-8. Phillips No. 1 L. Fields, C SE SE SW 32-11-8. Magnolia Pet. Co. of Dallas, No. 3 Williams, C S L SE NE NE 5-10-8. Dixie Oil Co.'s No. 1 Knight, C NE NW NE 6-7-8 (old well deepening—now complete).

Pawnee County—Privett & Sloan of Tulsa, No. 1 Schooland, NWc NE NW 16-20-6. Magnolia Pet. Co.'s No. 7 Baker, NEc NW NW 16-20-6; No. 9 Lesher, SWc SE NE 21-20-6. Superior Oil Co. of Lexington, Ky., No. 7, F. D. Chisman, NEc SW NE 25-20-7.

Payne County—Josey Oil Co. of Tulsa, No. 4 Long, SWc 36-19-5 (old well deepening.)

Hughes County—Lou Unburn, No. 3 J. H. Hill, C SW SE NW 11-10-11. E. L. Robinson & Amerada, No. 8 Carter, twin, NWc NE NE NW 4-9-9. Transcontinental Oil Co. of Tulsa, No. 1 Harjo, C SE NW SW 26-9-9. Farmac-Yarnell Drilling Co. No. 1 Dunzy, C SE SE NE 23-9-10. Roxana Pet. Co. of Tulsa, No. 3 Bulling, C NE NE NW 35-8-8. Reiter-Foster Oil Corp. of Tulsa, No. 2 M. Jefferson, C SE SW SE 35-8-8. Waite Phillips Co. of Tulsa, No. 2 Jefferson, C SW NE SE 35-8-8.

Beckham County—W. R. Duke, No. 1 McGee, NWc NW SE 25-8-22w.

Kiowa County—C. E. Reynolds No. 1 C. C. Smart, C S½ SE 12-6-17w.

Caddo County—English Drilling Co. No. 1 Abernathy, SEc SE SE 31-6-9w. Brisco & Hall, No. 5 Culp, NEc 6-5-9w. Diamond Drilling Co. No. 1 Royce, SWc NE 12-5-9w.

Stephens County—Humble O. & R. Co. of Houston, Texas, No. 1 Lindsey, SW NE 1-2-4w. Eagle Creek Oil Co. No. 3 Brown, C E L SE NE 26-1-9w (old well deepening). Grisby et al, No. 2 Worrell, NEc SW SE NW 22-1s-8w.

Carter County — Humble O. & R. Co.'s of Houston, Texas, No. 2 Jordan, C NW NE SW 18-1s-3w. Carter Oil Co. of Tulsa, No. 2 Tucker, SEc NE SW 29-2s-3w, (old well deepening). Magnolia Pet. Co. of Dallas, Texas, No. 1 Rollin, C NE NE NW 1-3s-2w. Amerada Pet. Co. of Tulsa, No. 8 Fish, NW NW SE 28-5s-1e.

Creek County—Lassen Bros. No. 2 Peters, NWc SW NW 13-19-8. Gled Oil Co. No. 1 Peters, SWc NW NW 13-19-8; No. 4 Lewis, C E L NE SE 14-19-8. The Texas Co. of Houston, Texas, No. 1-A Ford, SEc NE 24-16-8. Transcontinental Oil Co. of Tulsa, No. 1 Chenubia, SEc NW 14-18-9. Southwestern Pet. Co. of Tulsa, No. 2 Harjo, SWc SE SE 18-14-10.

Tulsa County—Sand Springs Home of Sand Springs, No. 2 Hodge, twin, SWc SE 10-19-11; No. 1 Smith, SWc SE NE 13-19-11. Riverland Oil Co. of Tulsa, No. 1-A Franklin, C E L NW NW 29-19-12. Superior Oil Co. of Lexington Ky., No. 5 Johns, C W L NE SE 26-19-11. Gladys Belle Oil Co. of Tulsa, No. 2 Postoak, C E L NW NW 29-18-12. McDonegal, No. 1 Cowan, NWc NW SE SW 7-19-12. J. B. Peterson, No. 1 Grayson, SWc NW NE NW 18-19-14. Pennington, No. 1 Franklin, NWc NE NW 20-19-14.

CALIFORNIA

Elk Hills Field—Union Oil Co.'s Elk Hills 11, 26-30-24.

Inglewood Field—Standard Oil Co.'s Vickers 10, 7-2-14; Vickers 11, 8-2-14; Vickers 12, 8-2-14. L. A. Investment 12, 8-2-14; L. A. Investment 13, 8-2-14. Petroleum Securities Co.'s Cone 10, 8-2-14; Rubel 7, 8-2-14. Shell Co.'s Rindge 2, 8-2-14.

Kern County Field—Smoot Oil Co.'s No. 1 1-27-18.

Long Beach Field—Pan-American Pet. Co.'s U. P. 7, 19-4-12; U. P. 8, 19-4-12.

Lost Hills Field—Universal Consolidated Oil Co.'s No. 45, 32-26-21.

McKittrick Field—Barnsdall Oil Co.'s No. 21, 30-29-22.

Midway Field—Federal Drilling Co.'s No. 2, 20-31-24; No. 3, 20-31-24. Honolulu Cons. Co.'s No. 23, 4-32-24. Pacific Oil Co.'s No. 21, 19-31-24.

Newport Field—Jesse M. Nelson Co.'s No. 1, 16-6-10.

Riverside County Field—Trabuca Oil Co.'s No. 1, 28-4-6.

Rosecrans Field—St. Helens Pet. Co. Ltd.'s Walsh 1, 20-3-13. Walter H. Fisher Corp.'s No. 12, 7-3-13.

Sunset Field—Midway Oil Co.'s No. 379, 35-12-24.

Ventura Field—Shell Co.'s Gosnell 17, 28-3-23.

LOUISIANA

Acadia Parish—Foxman Corp.'s (Manley & Clark), Trushel 2, 42-9s-2w, 450 ft N and 100 ft S of NE Cor. of Sec.

Caddo Parish—Fortuna Oil Co.'s Doan Thigpen 15, 5-20n-15w, 320 ft E and 270 ft N of Center of Sec. Gulf Ref. Co. of La.'s Elbert Tyson 11, 14-21n-15w, 1852 ft N and 1560 ft E of SW Cor. of Sec.

Calcasieu Parish—Gulf Ref. Co. of La.'s Gardner-Noble-Gray 63, 33-10s-12w, Approx.

1595 ft N and 400 ft W of SE Cor. of Sec; Star-Vincent 36, 34-10s-12w, 1000 ft N and 943 ft W of SE Cor. of SW¼; Vincent 39, 34-10s-12w, 993 ft W and 950 ft N of SE Cor. of SW¼. Vinton Pet. Co.'s Gray 4, 33-10s-12w, 1025 ft S and 100 ft W of NE Cor. NW¼ of SE¼.

Jefferson Davis Parish—Jeff Davis Oil Co.'s McGuire 2, 31-9s-3w, 235 ft S and 300 ft E of NW Cor. of Sec.

La Salle Parish—T. A. Mitchell's Richie 1, 25-8n-4e, 200 ft N and 200 ft W of SE Cor. of SE¼.

Morehouse Parish—Natural Gas Prod. Co. of La.'s Tensas Delta 6, 9-21n-4e, 1320 ft N and 1320 ft W of SE Cor. of Sec.

Sabine Parish—Toro Petroleum Co.'s Wyatt Lbr. Co. 1, 18-4n-11w, 972 ft S and 20 ft E of NW Cor. NW¼ of SE¼.

Webster Parish—Fortuna Oil Co.'s Maynor 2, 34-23n-10w, 660 ft S and 660 ft E of Center of Sec; E. W. Cox 3, 15-21n-10w, 330 ft E and 330 ft S of NW Cor. SW¼ of SW¼; E. W. Cox 4, 15-21n-10w, 330 ft S and 330 ft W of NE Cor. NW¼ of SW¼. Woodley Pet. Co.'s Gray 3, 26-21n-10w, 330 ft S and 330 ft W of NE Cor. SW¼ of NE¼; Coyle 4, 28-21n-10w, 330 ft S and 330 ft W of NE Cor. NW¼ of SW¼.

ARKANSAS

Bradley County—The Texas Co.'s Saline Lumber Co. 1, 11-16-10, 660 ft N and E of Center.

Calhoun County— Holtz & Thomas' Forest City Box Co. 1, 14-16-14, NWc NE¼ SW¼.

Columbia County—Greeson et al's Pearce 1, 3-18-10, center SW¼ SW¼. Magnolia Pet. Co.'s Hammond 3, 25-15-20. Pluto Oil Co.'s H. Dickens 1, 29-18-22, E½ NE¼ NW¼; Robinson 2, 23-18-23, 174 ft S and 644 ft W of NEc SE¼ SE¼.

Miller County—Humble O. & R. Co.'s Mann Land Co. 2, 22-16-16, 700 ft N and 300 ft E of SWc SE¼.

Nevada County—Humble O. & R. Co.'s Taylor 1, 11-15-22, 760 ft S and 200 ft E of NWc NE¼ NW ¼.

Ouachita County—J. E. Crosby's Berry 8, 33-15-15, NEc SW¼ NE¼. Guy Freeling's Gibson 3, 26-15-17, NEc NE¼ SW¼. Gulf Ref. Co.'s Flenniken 12, 5-16-15, 990 ft N and 330 ft E of SWc NW¼; Goodwin A-2, 5-16-15, old well to be deepened, 513 ft S and 200 ft E of NWc; Goodwin A-5, 5-16-15, 200 ft S and W of NEc Lot 1 in NW¼. Invaders Oil Co.'s Miller 6, 5-16-15, 150 ft N and 250 ft E of Center. Magnolia Pet. Co.'s Goodwin 7, 5-16-15, NEc Lot 2 in NW¼. Marine Oil Co.'s Snyder 8, 34-15-15, SWc NW¼ SW¼. Morefield et al's Umstead 4, 4-16-15, center of north line S½ SE¼ NW¼. Ohio Oil Co.'s Goodwin 5, 29-15-15, SEc SW¼ SE¼. Owenwood Oil Corp.'s Snyder 6, 34-15-15, NEc S½ SW¼ SW¼; Snyder 7, 34-15-15, NEc SW¼ SW¼; Snyder 8, 34-15-15, NWc SW¼ SW¼. Phillips Pet. Co.'s Farris 5, 34-15-15, 200 ft S and W of NEc SW¼ SE¼; Farris 6, 34-15-15, 200 ft N and 300 ft W of SEc SW¼ SE¼. Penguin Oil Co.'s Umstead 3, 4-16-15, 150 ft N and W of SEc S½ SW¼ NW¼. Pure Oil Co.'s Brister 8, 28-15-15, 212 ft N and 1980 ft W of SEc. Sinclair O. & G. Co.'s Berry 9, 33-15-15, center of north line NW¼ NE¼. Southern Crude Oil Purch. Co.'s Joyce 5, 34-15-15, 330 ft S and W of NEc SW¼ NW¼. Standard Oil Co.'s Bennett 6, 33-15-15, 200 ft S and W of NEc SW¼ SE¼; Griffin 6, 33-15-15, 330 ft N and 650 ft E of SWc NE¼ SW¼; Griffin 7, 33-15-15, 650 ft S and 330 ft E of NWc NE¼ SW¼; Griffin 8, 33-15-15, 330 ft S and 650 ft E of NWc NE¼ SW¼; Umstead 22, 33-15-15, 200 ft S and 300 ft W of NEc SE¼ SE¼. The Texas Co.'s E. Johnson 6, 34-15-15, 200 ft N and E of SWc SE¼ SE¼; E. Johnson 7, 34-15-15, 200 ft S and E of NWc SE¼ SE¼. Thurman et al's Wingfield 2, 5-16-15, NEc SW¼ NW¼ SE¼. Woodley Pet. Co.'s Langley 2, 35-15-15, NWc NW¼ SW¼.

Union County—Amerada Pet. Corp.'s Flenniken 9, 6-16-15, SEc NW¼ SE¼; Lyall 9, 3-16-15, center of east line Lot 3 in NW¼. Arkansas Fuel Oil Co.'s Ferguson 8, 6-16-15, NEc NW¼ SW¼. Crawford & Sebastian's James 8, 6-16-15, 200 ft N and 330 ft W of center. Eason et al's Palmer 4, 9-16-15, old well to be deepened, NEc W½ SE¼ SW¼. Federal Pet. Co.'s Flenniken 10, 6-16-15, NEc SW¼. Gulf Ref. Co.'s H. Murphy 6, 3-16-15, 200 ft S and W of NEc SW¼ SW¼, old well to be deepened; H. Murphy 32, 3-16-15, 1650 ft N and 330 ft E of SWc; T. C. Murphy 15, 9-16-15, 1520 ft S and 1050 ft W of NEc. Imperial O. & G. Co.'s Murphy 1, 9-16-15, 150 ft S and W of NEc W½ SW¼ NE¼. Keen & Woolf's Murphy 5, 9-16-15, NWc E½ SE¼ NW¼. Magnolia Pet. Co.'s Bradford 3, 8-16-15, NWc S½ NW¼ NW¼. Mazda Oil Corp.'s Lawton B-1, 10-16-15, 270 ft S and W of NEc NE¼ SW¼; Lawton B-4, 10-16-15, SWc N½ NE¼ SW¼. Noco Oil Co.'s Flenniken 3, 5-16-15, NEc SW¼ SW¼. Murdock et al's Hays 6, 4-16-15, SEc NE¼ NE¼. Pure Oil Co.'s Meriweather 1, 6-16-15, 210 ft S and W of NWc NE¼ SW¼, old well to be deepened. Rogers et al's LeCroy 1, 17-16-15; Ramage et al's Lawton C-6, 10-10-15, 150 ft N and E of SWc SW¼ NW¼, old well to be deepened. Roxana Pet. Corp.'s Bilyieu 1, 9-16-15, SEc SW¼ NW¼; Flenniken A-2, 10-16-15, SEc NW¼ SE¼. Standard Oil Co.'s McClanahan 7, 6-16-15, 445 ft S nad 200 ft E of NWc Lot 4 in NE¼. Stark et al's Ezell 1, 18-17-14, old well to be deepened. Sun Oil Co.'s Hays 14, old well 15, center of east line SW¼ NW¼. The Texas Co.'s Berry B-5, 8-16-15, 200 ft N and E of SWc SE¼ NW¼; Berry B-6, 8-16-15, NWc SE¼ NW¼; J. Berry B-7, 8-16-15, SEc SE¼ NW¼; J. Berry B-8, 8-16-15, NEc SE¼ NW¼. Unity Pet. Co.'s Bilyieu 5, 8-16-15, 200 ft S and 300 ft E of NWc SW¼ NE¼; Bilyieu B-3, 8-16-15, SWc SE¼ NE¼; Bilyieu B-4, 8-16-15, NWc SE¼ NE¼.

TEXAS

Archer County—Shappell Oil Co.'s, Wichita Falls, Texas, J. L. Jackson 21-A, B 23, D. C. S. L. sur No. 4, 50 ft W No. 21. Texhoma Oil & Ref. Co.'s, Wichita Falls, Texas, J. A. Kunkle 1, H. Standiford sur, 935 ft to W and 150 ft to S line. Texas Co.'s, Wichita Falls, Texas, R. E. Hill 4, 2408 TE&L sur, 766 ft to E and 150 ft to S line. J. P. Rayzor's, Waggoneer Bldg., Wichita Falls, Texas, T. B. Wilson 1, H. H. Kirk sur, 150 ft to S and E lines. Tidal Oil Co.'s, W. T. Waggoner Bldg., Ft. Worth, Texas, S. Cowan 1, S 49, J. C. S. L. sur, 150 ft to N and W lines. Murchison & Fain's, Wichita Falls, Texas, H. Harmel 11, 2401 TE&L sur, 463 ft to S and 150 ft to E line; 12, same sur, 1270 ft to N and 466 ft to W line; Campbell Bk. Co. 1-A, B 13, S. Anderson sur, 150 ft to N and E lines; H. Harmel 5, 2401 TE&L sur, 950 ft to W and 150 ft to N line; 6, same sur, 300 ft E No. 5; 7, same sur, 400 ft W No. 5; E. Echols 7, 2405 TE&L sur, 330 ft to E and 150 ft to N line; 8, same sur, 150 ft to E and 450 ft to S line; 9, same sur, 300 ft W No. 7; 10, same sur, 450 ft to E and 150 ft to S line; 11, same sur, 300 ft SE No. 6; 12, same sur, 300 ft W No. 9; T. A. Waggoner 1, 775 TE&L sur, (Throckmorton county). Marland Oil Co.'s, Cotton Exchange Bldg., Houston, Texas, J. Scott 1, BBB&C Ry sur, 3200 ft to E and 6800 ft to S line. Mills Bennett's Second Nat. Bank Bldg., Houston, Texas, F. L. Sorelle 1, 2471 TE&L sur, 150 ft to S and E line. McCarty Oil Co.'s, Bob Waggoner Bldg., Ft. Worth, Texas, L. F. Wilson 5, E. Hall sur, 745 ft to E and 1130 ft to S line. Sunshine Consolidated Oil Co.'s, Wichita Falls, Texas, G. Parrish 9, B 52, M. C. S. L. sur, 300 ft E No. 8. Ray Featherston Oil Co.'s, Staley Bldg., Wichita Falls, Texas, L. F. Wilson 1, BBB&C Ry sur, 150 ft to S and E lines. F. W. Mennick's, Ardmore, Okla., J. D. Bell 1, S 5, Clark & Plumb sur, 165 ft to N and W lines. Prairie Oil & Gas Co.'s, Ranger,Texas, J. T. Richardson 21, J. L. Anderson sur, 336 ft E No. 20. Shaw & Rathke's, Wichita Falls, Texas, M. E. Rogers 3, 1596 TE&L sur, 300 ft S No. 2. Davis-Hart Co.'s, Staley Bldg., Wichita Falls, Texas, Roach & Junker 10, 1594 TE&L sur, 300 ft S No. 9. Phillips Petroleum Co.'s, Bartlesville, Okla., J. L. White 68, B 35, Amer. Trib. sur, 300 ft W No. 62; 69, same sur, 300 ft S No. 66. Wichita Production Co.'s, City Nat. Bank Bldg., Wichita Falls, Texas, Campbell Bk. Co. 6, B 10, S. Anderson sur, 300 ft W No. 3. R. R. Robertson's, Box 434, Wichita Falls, Texas, A. J. Lowe 6, I. Holman sur, 300 ft S No. 5. Gulf Production Co.'s, Ft. Worth, Texas, V. E. Stampfli 7, 2408 TE&L sur, 150 ft to N and W lines. United Central Oil Corp.'s, Wichita Falls, Texas, J. F. Rogers 10, 2407 TE&L sur, 300 ft E No. 9. Riner & Bailey's, Wichita Falls, Texas, L. F. Wilson 22, B 29, Amer. Trib. sur, 1220 ft to E and 450 ft to S line. Wichtex Oil Co.'s Ben Waggoner Bldg., Wichita Falls, Texas, L. McCrory 1, B 65, Amer. Trib. sur, 150 ft to N and E lines; L. F. Wilson 4, B 29, Amer. Trib. sur, 300 ft S No. 3. Major Petroleum Co.'s, F. & M. Bank Bldg., Ft. Worth, Texas, S. M. Cowan 5, B 50, J. C. S. L. sur, 150 ft to N and W lines; 6, same sur, 400 ft to W and 150 ft to S line. Bridwell & Mayfield's, Wichita Falls, Texas, J. T. Richardson 20, S 9, J. L. Anderson sur, 396 ft E No. 17; 21, same sur, 306 ft E No. 19. Magnolia Pet. Co.'s, Dallas, Texas, J. F. Rogers 4, 2406 TE&L sur, 300 ft E No. 2.

Anderson County—J. S. Cosden's, 730 Fifth Ave., New York, N. Y., Daniels Bros. 1, C. G. Headright sur, 290 ft to N and 841 ft to E line; Brooks & Auld 2, I. Simpson sur, 250 ft E No. 1.

Brown County—Rhodes & Higher's, Breckenridge, Texas, W. A. Prater 7, W. B. Travis sur. C. O. Moore & Florence Oil Co.'s, Cross Plains, Texas, J. K. Gafford 3, Wm. Miller sur, 165 ft to W and 700 ft to S line. Root, Rhodes & McMurray's, Eastland, Texas, J. W. Newton 5, Wm. Miller sur, 300 ft E No. 4; 6, same sur, 300 ft E No. 1. R. F. Gilman et al's, Box 117, Cisco, Texas, A. B. Teston 4, W. B. Smith sur, 300 ft N No. 3.

Baylor County—Texhoma Oil & Ref. Co.'s, Wichita, Falls, Texas, W. H. Portwood 2, 3140 TE&L sur, 50 ft to N and 150 ft to E line. Cranfill Bros. Oil Co.'s, Waggoner Bldg., Wichita Falls, Texas, W. B. Mills 3, 2413 TE&L sur, 600 ft W No. 2.

Bexar County—Helvetia Oil Co.'s San Antonio, Texas, S. Smith 11, E of No. 12; 12, SW Cor.

Callahan County— M. H. Crabb's, Cross Plains, Texas, T. C. Thorn 1, R. Edward sur, 150 ft to W in center of line. Mardon Oil Co.'s, F. & M. Bank Bldg., Ft. Worth, Texas, L. D. Harwell 1, J. Smith sur, 437 ft to N and 150 ft to E line. G. T. Davis', Burkburnett, Texas, W. M. Isenhour 3, 2299 TE&L sur, 450 ft to N and 600 ft to W line. H. W. McGee's, Albany, Texas, Diller Bros. 1, S 54, L. A. L. sur, 150 ft to E in center of line. McClung-Van Eman & Van Bebbe's, Cisco, Texas, R. F. Scott Jr. 1, S 34, D&D Asy sur, 150 ft to S and W lines; J. Smart 1, S 44, same sur, 750 ft to N and W lines. Moutray Oil Co.'s, Cisco, Texas, W. M. Isenhour 2, S 8, Bayland Asy sur, NE Cor.; 8, same sur, 150 ft to N and 450 ft to E line. G. L. Lyda's, Putnam, Texas, M. Eubanks 1, 3161 TE&L sur, 150 ft to N and W lines. Atkinson & Ferguson's, Box 535, Moran, Texas, J. R. Hunt 1, S 107, Univ. Lands sur, 150 ft to E in center of line. Smith & Brower's, Wichita Falls, Texas, Yarbrough 4, 2290 TE&L sur, 150 ft to N and E lines; 5, same sur, 450 ft to N and 150 ft to E lines; 6, same sur, 300 ft E No. 4; J. C. Park et al's, Wichita Falls, Texas, Z. C. Wagley 8, S 2, D&D Asy sur, 300 ft E of No. 1; 9, same sur, 300 ft E No. 2; 10, same sur, 300 ft N No. 9. Sanger Oil & Ref. Co.'s, Abilene, Texas, Harwell 1, S 308, S. P. Ry sur, 1360 ft to E and 150 ft to N line. S. J. Price et al's, 727 Essex St., Ft. Worth, Texas, M. Eubanks 1, 3161 TE&L sur, 450 ft to S and E lines. Canyon Oil & Gas Co.'s, Cross Plains, Texas, M. Kennedy 1, Bayland Asy sur, 150 ft to N and W lines. Davis-McKee Co.'s, Vernon, Texas, W. H. Jobe 7, S 11, Bayland Asy sur, NE Cor. B. M. Hatfield's, Ft. Worth, Texas, J. Cottle 1, 3196 TE&L sur, 150 ft to S and E lines. Honea, Lucey & Hawkins', Putnam, Texas, J. T. Kelly 2, S 3, Bayland Asy sur, 300 ft W No. 1. D. R. Shupe's, Moran, Texas, H. Wagley 11, 2996 TE&L sur, 600 ft to W and 150 ft to S line.

Coleman County—Canyon Oil & Gas Co.'s, Cross Plains, Texas, E. E. Rich 1, C. C. S. L. sur, 150 ft to S and E lines. C. O. Moore's, Cross Plains, Texas, J. C. Watson 1, Wm. Mason sur, 150 ft to S and E lines.

Clay County—Lone Star Gas Co.'s, Dallas,

Texas, N. H. Martin 24, B 58, B. C. S. L. sur, 1000 ft to W and 200 ft to S line.

Caldwell County—Humble Oil & Ref. Co.'s, Houston, Texas, M. L. Brewer 24, P. Martinez sur, 514 ft to NW and 679 ft to SW line; 21, same sur, 1070 ft to NW and 625 ft to SE line; 22, same sur, 770 ft to NE and 627 ft to SE line; 20, same sur, 632 ft to NW and 402 ft to SW line; 23, same sur, 410 ft to NE and 582 ft to SE line. Grayburg Oil Co.'s, San Antonio, Texas, Mrs. E. A. Gomillion 6, P. Martinez sur, NE of No. 4; 7, same sur, NE No. 6; 8, same sur, NE Cor.; 9, same sur, NE No. 5; 10, same sur, NE No. 9. Sun Oil Co.'s, Dallas, Texas, A. H. Gomillion 22, P. Martinez sur, 1502 ft to E and 635 ft to S line. Gulf Production Co.'s, Houston, Texas, M. L. Brewer 9, J. Burleson sur, 329 ft NE No. 8; F. A. Gomillion 9, P. Martinez sur, 300 ft NW No. 3. Quaker Oil Co.'s, Austin, Texas, Palmer 4, Castillo sur, South No 2; 5, same sur, south No. 3.

Cass County—G. W. Sharp's, Queen City, Texas, Bloomberg State Bank 1, R. Peters sur, SE cor.

Comanche County—Chastain's Butler et al's 701 Cherry St., Ranger, Texas, D. P. Lloyd 1, S 56, H&TC Ry sur, 450 ft to E and 670 ft to S line.

Duval County—Humble Oil & Ref. Co.'s, Houston, Texas, Schallert 1, B 13, SK&K sur, 1150 ft to S and 10 ft to E line. **Texas Gulf** Sulphur Co.'s, Second Nat. Bank Bldg., Houston, Texas, Gravis Bros. 2, S 254, S&M sur, 2040 ft to E and 2348 ft to S line.

Eastland County—Panhandle Ref. Co.'s, Wichita Falls, Texas W. Casey 1, B 59, McL. C. S. L. sur, 600 ft to N and E lines. C. M. Root's, Eastland, Texas, R. Q. Lee 1, S 44, H&TC Ry sur, center. States Oil Corp.'s, Eastland, Texas, J. R. Stubblefield 1, S 28, H&TC Ry, 650 ft to E and 150 ft to S line.

Freestone County—Humble Oil & Ref. Co.'s, Houston, Texas, J. P. Stubbs 5, R. B. Longbotham sur, 141 ft N No. 3; 6, same sur, 300 ft E No. 2; W. S. Evans 1, R. B. Longbotham sur, 50 ft to S and E lines; E. C. Crouch 1, same sur, 62 ft to E and 98 ft to S line.

Fort Bend County—Marland Oil Co.'s Cotton Exchange Bldg., Houston, Texas, H. P. Lockwood 3, S 3, C. D. Sayre sur, 200 ft to S and E lines. Paul Schulte's, Oak Park, Ill. J. E. Winston 5, J. H. Long sur, 1160 ft to N and 165 ft to W line.

Galveston County—Sun Oil Co.'s, Beaumont, Texas, E. K. Cade 9, Fitzsimmons sur, 250 ft SE No. 3.

Harris County—Cezeaux & Martin's, Humble, Texas, J. Hirsch 18, J. B. Jones sur, 350 ft to W and 20 ft to N line. Rolyat Prod. Co.'s, Keystone Bldg., Houston, Texas, Cherry 4, Jas. Strange sur, north central. Gulf Production Co.'s, Houston, Texas, Stateland Oil Co. 34, F. J. Demeritt sur, 275 ft W No. 33; Beaumont Pet. Co. 31, Lee Hager sur, 300 ft W No. 30.

Hutchinson County—J. R. Phillips, Currie & Spann's, Amarillo, Texas, W. L. Kingsland 1, S 6, M&C sur, north central; 2, same sur, 660 ft to N and W lines.

Hardin County—Regna Oil Co.'s, Saratoga, Texas, Ogden 1, C. F. S. Jorditt sur, 40 ft to W and 25 ft to S line. Eagle Point Oil Co. Inc.'s, Box 154, Daisetta, Texas, Hamilton Est. 1, J. M. Jackson sur, SE cor. Lake View Oil Co.'s, Sour Lake Texas, Minor Oil Co. 6, S. Jackson sur, SW cor.

Jefferson County—Laughman Co.'s, Box 904, Beaumont, Texas, Gulf 1, J. A. Veatch sur, 35 ft to W in center of line.

Jim Hogg County—Kitzleman & St. Alban's, Laredo, Texas, J. T. Vela 16, S 580, B 1, 300 ft N No. 1; 17, same sur, 300 ft N No. 16. Henne, Winch & Farriss' Laredo, Texas, A. Martinez 3, S 256, B 12, 300 ft S No. 2; 4, same sur, 370 ft NE No. 1.

Kleberg County—Humble Oil & Ref. Co.'s, Houston, Texas, R. J. Kleber 1, F. Diamond sur, 100 ft to S and W lines.

Liberty County—Texas Co.'s, Houston, Tex., Simms 5, D. Minchey sur, 200 ft W No. 3; 6, same sur, 200 ft W No. 4; Hannah 5, J. Devore sur, 200 ft S No. 3. Sinclair Oil & Gas Co.'s, Chronicle Bldg., Houston, Texas, Condict Fee 3, D. Minchey sur, 200 ft W No. 2. Humble Oil & Ref. Co.'s, Houston, Texas, A. Deussen 1, D. Minchey sur, 55 ft to N and 4405 ft to E line; 2, same sur, 55 ft to N and 4706 ft to E line; Pickett 3, M. G. White sur, 150 ft W No. 2; Merchant 4, J. Devore sur, 200 ft to S and 50 ft to E line. Gulf Production Co.'s, Houston, Texas, A. Deussen 5, D. Minchey sur; 6, same sur; Phoenix 2, J. Devore sur, 122 ft to N and 900 ft to E line; J. C. Baldwin 14, J. Devore sur, 200 ft S No. 13. Associated Oil Co.'s, First Nat. Bank Bldg., Houston, Texas, A. Deussen 2, D. Minchey sur, 200 ft W No. 1. Sun Oil Co.'s, Beaumont, Texas, Schade 11, D. Minchey sur, 150 ft W No. 1.

Limestone County—Pure Oil Co.'s, Mexia, Texas, C. O. Wright 1, S. McAnulty sur, 360 ft to W and 203 ft to S line.

Montague County — Texas Co.'s, Wichita Falls, Texas, I. A. Gist 4, Wm. Donoho sur, 2900 ft to N and 250 ft to W line.

Matagorda County—E. B. Reeser's, Box 2003, Tulsa, Okla., S. L. Hurlburt 1, S 551, GC&SF Ry sur, 785 ft to E and 250 ft to S line.

Milam County — Texas Plains Synd.'s 4711 Lake Park Ave., Chicago, Ills., C. F. Niehaus 4, T. J. Chambers sur, south of No. 2.

Mitchell County—California Co.'s, Colorado, Texas, Missouri State Life Insurance Co. 1, S 10, T&P Ry sur, 330 ft to E and 990 ft to S line; H. C. Miller 1, S 22, T&P Ry sur, SW cor.

Navarro County—Roxana Pet. Co.'s, First Nat. Bank Bldg., Houston, Texas, J. Bailey 1, J. Rahm sur, NE cor. Skelly Oil Co.'s, Tulsa, Okla., J. B. Bailey 2, J. Rahm sur, 150 ft to N and W lines. Greenwood & Johnson's, W. T. Waggoner Bldg., Ft. Worth, Texas, Greer 1, C. Rushing sur, 150 ft to S and W lines. Munt Oil & Gas Co.'s, 41 East 42d St., New York, N. Y., F. Hines 24, J. McNeil sur, 200 ft to N and W lines. Humble Oil & Ref. Co., Houston, Texos, G. C. Kent 16, Hrs. J. Smith sur, 740 ft S No. 15; 17, same sur, 315 ft S No. 16; 18, same sur, 315 ft S No. 17; S. D. Ramsey 13, Hrs. J. Smith sur, 255 ft N No. 2; 14, same sur, 255 ft N No. 12; 12, same sur, 450 ft W No. 11; W. Smith 5, J. Havens sur, 300 ft E No. 3; 6, same sur, 300 ft E No. 4. Gulf Production Co.'s, Ft. Worth, Tex., R. Smith 10, J. Havens sur, 378 vs. W and 51 vs. to N line. King State Oil Co.'s, Main Hotel, Corsicana, Texas, J. W. Laird 1, G. W. Dunnigan sur, east central.

Orange County—Gulf Prod. Co.'s, Houston, Texas, F. T. Peveto 10, Wm. Dyson sur, 300 ft W No. 9. Orange Pet. Co.'s, Orange, Texas, O. Chesson 5, Wm. Dyson sur, 180 ft E No. 1.

Panola County—J. C. McCormick's, Box 96, Marshall, Texas, N. Griffin 1, W. H. Lacey, 350 ft to S and E lines; J. M. Lawless 3, P. M. May sur, 1250 ft to E and 250 ft to S line.

Shackelford County—Hope Petroleum Co.'s. Albany, Texas, Reynolds 2, S 24, T&P Ry sur, 600 ft S No. 1. Phillips Petroleum Co.'s, Bartlesville, Okla., J. A. Parrish 5, S 47, Blind Asy sur, 500 ft E No. 4; 6 same sur, 506 ft E No. 1. Ray Wilbanks', Putnam, Texas, Diller 2, sec 55, 300 ft to N and 900 ft to E line. W. H. Kirby & Son, Moran, Texas, A. McLaury 1, S 88, Univ. Lands sur, 650 ft to E and 450 ft to S line. G. S. Anderson's, Worth Bldg., Ft. Worth, Texas, V. M. Fomby 2, L. A. L. sur, 150 ft to S and W lines.

Stephens County—Quakins Petroleum Co.'s, Frankell, Texas, J. W. Harmon 10, S 51, T&P Ry sur, 1300 ft to E and 900 ft to S line. Kohn, Meyers et al's, Box 714, Ranger, Texas, C. C. Powers 1, S 2, T&NO Ry sur, 225 ft to W and 450 ft to N line. Mid-Kansas Oil & Gas Co.'s, Tulsa, Okla., S. H. Hall 6, 1122 TE&L sur, 380 ft to E and 1900 ft to S line; J. W. Hill 17, J. C. Tally sur, NE cor. Texas Pacific Coal & Oil Co., Ranger, Texas, T. L. Adams 8, S 65, T&P Ry sur, 1320 ft to W and 2550 ft to S line; A. S. Veale 8, 1428 TE&L sur, 1725 ft to E and 430 ft to S line.

Sterling County—Wrightsman Pet. Co.'s, Box 462, Tulsa, Okla., W. L. Forster 1, S 2, W. C. Patterson sur, 433 Vs. to W and 475 Vs. to S line.

Stonewall County—Elder Nance et al's, Aspermont, Texas, Mrs. E. Thomas 1, S 137, H&TC Ry sur, 150 ft to S and 160 ft to E line.

Throckmorton County—Humble Oil & Ref. Co.'s, Wichita Falls, Texas, J. L. Stubblefield Murchison & Fain's, Wichita Falls, Texas, T. A. Waggoner 1, 775 TE&L sur, 150 ft to S and W lines.

Wichita County—Staley & Wynne's, Staley Bldg., Wichita Falls, Texas, G. W. Wolf 1, B 2, 991 TE&L sur, 330 ft to S and E lines. 49, R. R. V. L. sur, 450 ft to E and 150 ft to S line. J. W. Hooser's, Dallas, Texas, T. F. Mitchell 2, P. Castleman sur, 300 ft S No. 1; 3, same sur, 300 ft W No. 1. Hazlitt & Simmons Corp.'s, W. T. Waggoner Bldg., Ft. Worth, Texas, Bentley 8, P. Corrigan sur, 150 ft to N and E lines; J. A. Fisher 6, S 24, H&GN Ry sur, 150 ft to E and 450 ft to S line. Consolidated Oil Co. of Texas', Wichita Falls, Texas, F. O. Dumont 1, Waggoner Subdiv., 150 ft to W and 1170 ft to S line; W. T. Waggoner 1, S 50, H&TC Ry sur, 150 ft to N and E lines. W. A. Patterson's, F. & M. Bank Bldg., Ft. Worth, Texas, J. A. Fisher 2, S 75, H&GN Ry sur, 300 ft S No. 1. H. Wehr's, Box 727, Bartlesville, Okla., E. E. Elsea 3, B 88, R. R. V. L. sur, NW cor; C. T. Taylor 2, B. 92, same sur, NW cor; 3, B 92 same sur, SE cor. Jno. O'Neil's, Wichita Falls, Texas, Rio Bravo 14, S 31, H&TC Ry sur, 300 ft S No. 3. W. E. Timblin, et al's, Wichita Falls, Texas, H. Willis 3, BBB&C Ry sur, 300 ft N No. 1. W. L. Mann's, 710½ Ohio St., Wichita Falls, Texas, Roller 4, J. Mumpford sur, 300 ft E No. 3. Humble Oil & Ref. Co.'s, Wichita Falls, Texas, L. P. Douglas 18, S 11, HT&B Ry sur, 450 ft S No. 17. Dale Oil Corp.'s, Wichita Falls, Texas, G. Jennings 11, S 12, HT&B Ry sur, 300 ft SE No. 7. W. M. Moore's, Waggoner Bldg., Wichita Falls, Texas, T. L. Burnett 5, S 7, HT&B Ry sur, 300 ft W No. 3. Ryan Petroleum Co.'s, Bartlesville, Okla., Geo. Nance 34, S. O. Fowler sur, 150 ft W No. 33. Apple Brandeberry Oil Co., Wichita Falls, Texas, Mrs. G. Jennings 3-B, S 12, HT&B Ry sur, 150 ft to S and E lines. Ascot Co.'s, Box 342, Wichita Falls, Texas, J. E. Roller 28, W. A. Grady sur, 150 ft to E and 315 ft to N line. Bullington, Lee & Pendleton's, Staley Bldg., Wichita Falls, Texas, G. Jennings 2, S 12, HT&B Ry sur, 277 ft N No. 1. Texhoma Oil & Ref. Co.'s, Wichita Falls, Texas, S. B. Burnett 6, S 2, HT&B Ry sur, 150 ft to N and W lines; S. B. Burnett 4, same sur, 150 ft to E and 481 ft to S line; S. B. Burnett 1, same sur, 150 ft to N and W lines; D. E. Hooks 1, R. J. Scott sur, 150 ft to S and W lines.

Wilbarger County— Gulf Production Co.'s, Ft. Worth, Texas, W. T. Waggoner 2, S 50, H&TC Ry sur, 525 ft SW No. 1. T. R. T. Orth's, Wichita Falls, Texas, W. M. McCalleb 1, S 15, H&TC Ry sur, 150 ft to S and E lines. South Vernon Oil Co.'s, Vernon, Texas, C. Zipperle 3, S 84, H&TC Ry sur. Barkley & Meadows', Wichita Falls, Texas, W. H. Stephens 1, S 83, H&TC Ry sur, 150 ft to N and E lines. Bridwell & Heydrick's, Wichita Falls, Texas, S. A. Dill 9, S 84, H&TC Ry sur, 300 ft N No. 4. Humble Oil & Ref. Co.'s, Wichita Falls, Texas, R. L. Castlebury 19, S 83, H&TC Ry sur.

Webb County—Lewis Oil Co. & National Ref. Co.'s, 3416 St. Johns Drive, Dallas, Texas, Mrs. R. de Benavides 1, 701½. Daniels & English's, Mirando City, Texas, Reiser 1, 16 and 17 sur, center.

Young County—Gulf Prod. Co.'s, Ft. Worth, Texas, F. G. Swain 1, 161 TE&L sur, 150 ft to N and W lines; W. B. Cheves 1, H. B. Akles sur, 150 ft to S and W lines. C. O. Mooers et al's, City Nat. Bank Bldg., Wichita Falls, Texas, W. J. Logan 1, I. Holman sur, 150 ft to N and 113 ft to W line. Murchison & Fain's, Wichita Falls, Texas, B. Schlegel 16, BBB&C Ry sur, 300 ft S No. 7; W. Wilson 1, J. Poitevent sur, 150 ft to N and E lines. Simms Oil Co.'s, Dallas, Texas, J. D. Carpenter 3, 237 TE&L sur, 150 ft to N and E lines. N. D. Goldsmith's, Olney, Texas, J. E. Bishop 1, 162 TE&L sur, 150 ft to N and W lines. Consolidated Oil Co. of Texas', Wichita Falls, Texas, J. P. Dunnagan 1, 170 TE&L sur, 150 ft to S in center of line. F. H. E. Oil Co.'s, Staley Bldg., Wichita Falls, Texas, S. Groves 3, 161 TE&L sur, 300 ft N No. 1. O'Neall & Suggett's, Morgan Bldg., Wichita Falls, Texas, J. O. Winkler 1, Crawford sur, 150 ft to N and E lines. Wichita Drilling's, City Natl. Bank Bldg., Wichita Falls, Texas, W. Bryan 1, 1367 TE&L sur, 200 ft to S and E lines. Christie Bros.', Wichita Falls, Texas, J. A. McLaren 6, O. T. Criswell sur, 575 ft W No. 4.

NEW EQUIPMENT, CATALOGS, BULLETINS, BOOKS

Device Detects Oil Show In Wildcat Wells

A device, used on the drill stem, to test the oil flow possibilities of any promising stratum while drilling, has been designed by Chas. R. Edwards, president of the Houston Engineers, Inc., Houston, Texas.

Oil Tester for Wildcat Wells

In fact it is claimed that with this device the mud pumps can maintain the mud circulation through the rotating drill stem while the oil is actually flowing to the surface of the ground through the test tube from an oil bearing stratum at the bottom of the well.

The cut herewith shows the tester in vertical cross section. The upper section is the blowout preventer swivel used above the rotary table. The pump connection is through a tee side opening just below the blowout preventer, and above the elevator connection which is immediately above the upper swivel gland.

The tester proper is shown in the lower part of the cut, at the very bottom of the cut is shown the top of a packer. This may be any suitable open hole packer such as are now on the market in many forms. Above the packer connection is the lower swivel. At the top of the lower part of cut is the drill stem lower connection.

Two sections of the test tube are shown. For four-inch drill stem with standard tool joints the test tube is usually of interchangeable tubing. At the lower end of the test tube is a section of perforated tubing with very small perforations. At the upper end of the perforated section of the inside of the test tube is a knock out plug.

The bottom of the lowest test tube coupling is beveled to make a tight joint in the lead seal shown at upper end of the perforated joint of the test tube.

The arrows outside the test tube show the mud circulation courses, those inside the test tube and at the bottom of test tube show the direction of the oil flow.

The packer is set and the test tube seated in the lead seal. This separates the well into two compartments.

The lower compartment can be opened into the test tube by dropping a light go-devil into the empty test tube breaking the knock out plug at the bottom of the perforated joint of the test tube. This is equivalent to instantly bailing the well dry so far as the lower compartment of the well is concerned.

The oil and gas, if any, now being suddenly relieved of the enormous mud pressure can flow up to the surface through the test tube giving the operator it is claimed positive knowledge of not only its presence but its quality and quantity as well as the gas pressure; thus directing him how to prepare to handle the well in the proper way.

It is claimed this device will shorten the time and very greatly lessen the expense of wildcatting, and thoroughly test a lease as every foot of the hole can now be flow tested without setting screen and casing.

The flow test is made by actually flowing the oil from the well if present in the stratum tested.

It is also claimed that it requires very little more time to flow test a well with this device than to run a core barrel, and as 50 or 100 feet may be flow tested at a time it costs less than coring each ten feet of hole.

It is claimed from past experience that the flow test is the only known sure test of a paying well.

It is a well known fact that with old methods many times the pay sand is passed up or casing is set at great expense without making a well.

Additional information can be had from the Houston Engineers, Incorporated, P. O. Box 276, Houston, Texas.

Sand Reel Makes Good Record in Deep Wells

Coffeyville, Kansas.—The Oil Country Specialties Manufacturing Company of this city announces that its S. & B. Chain Driven Sand Reel is making an unusual record in deep wells in Wyoming and Colorado, and in the Mid-Continent.

The deepest well on which the reel is being used at the present time is one at Medicine Bow, Wyoming, being drilled by the Producers and Refiners Corporation. The well is now drilling below 6930 feet.

The Rollestone well at Longmont, Colorado, which recently suffered a fire was equipped with one of these sand reels. This well was at a depth of 6840 feet when it caught fire.

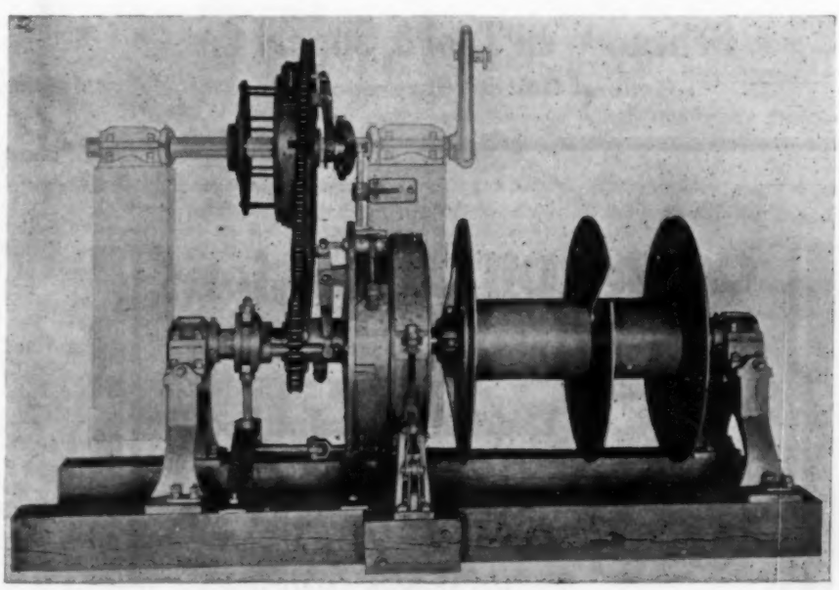
Manufacturers of the S. & B. Chain Driven Sand Reel claim economy in bailing as its main feature. The reel is used only on cable-tool wells.

Regulator Controls Efficiently Vapors

Operators will be interested in a new back pressure and vacuum gas flow regulator which is now being introduced to the trade by Neilan, Abbey & Company, 439 S. San Pedro Street, Los Angeles, California.

This regulator has been designed for the control of the flow of gas and gasoline vapors in gas lines from casing heads, run tanks, and traps from flowing or pumping wells, and is constructed to maintain constant pressure or vacuum conditions regardless of the pressure or vacuum on the delivery, or down-stream side of the valve (which may be as high as fifteen or twenty inches vacuum.)

When used on flow tanks from flow-



S. & B. Chain Driven Sand Reel

Rears & Sawbuck Guarantee

Ironclad and Holeproof

WE HAVE not the ghost of a desire to sell you PELCO Fishtail Bits unless they will make more hole eventually and between redressings than any other fishtail bit you ever used.

If your supply store handles PELCO Bits he will sell you one on approval. Treat it to all the rough stuff in your bag of tricks, and if you are not convinced that you've found the world's best, take it back and get your money.

DEALERS

Independent Supply Stores in any Rotary field can build profitable repeat business on PELCO Bits. Write for proposition.

If there is no dealer in your field, ship us the shank of an old bit for a templet, and we'll ship you one PELCO Bit or a hundred on the same ironclad guarantee.

GOOD PEOPLE TO DO BUSINESS WITH

Pelican Well Tool & Supply Co.

General Offices: Shreveport, La.

Crude Oil Emulsions Successfully Treated

- - - by the - - -

Electrical Dehydration Process

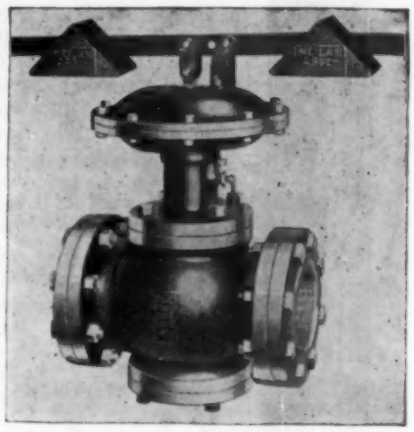
• [Analysis, Tests, and Estimates Furnished] •

PETROLEUM RECTIFYING
COMPANY OF CALIFORNIA
308 UNION OIL BLDG.
LOS ANGELES, CALIFORNIA
336 Humble Building, Houston, Texas

ing or pumping wells or where flow tanks are installed over the run or storage tanks, this regulator may be adjusted to maintain any constant vacuum sufficient to remove and return fixed gases and vapors from the oil to the compressor without lowering the gravity of the oil.

The regulator has no stuffing box and the general design and construction eliminates practically all friction. There is no danger of the valve sticking or binding, a very important point in any regulator.

When this regulator is used where



Nielan Abbey Gas Flow Regulator

there is a pulsating load, such as would be encountered from heading wells, the action of the regulator can be controlled by means of the throttling plug which may be adjusted so as to cushion the effect of sharp changes in pressure and prevent chattering and pounding of the regulator. Perfect cushioning and proper balance are thus established.

The regulator is self-contained and is easy and simple to install. The valve is full area of pipe size. Two weights are furnished with the lever. When operating on lower pressures or vacuum a weight is placed on either end of the lever and perfect balancing may be obtained. Under these conditions the center holes in the lever are used with changeable fulcrum. By adjusting the weights the desired pressure or vacuum may be obtained. For higher pressures up to 10 pounds the end holes on lever are used with changeable fulcrum and both weights are placed on the same end of the lever.

Further details about the regulator will be supplied upon request to Neilan, Abbey & Company, 439 S. San Pedro Street, Los Angeles, California.

Foamite-Childs Corporation, fire protection engineers and manufacturers, Utica, New York, announce the resignation of George W. Lee as manager of general sales. He will be succeeded by C. P. Smith. This change in management brings all of the Foamite-Childs sales departments together under one manager.

LETTERS OF Paul Peebles P.S.G.

mi deer cleopatry

well cleo hunny like I told yu in mi last that I mabe mite, I had 2 go down 2 galveston last satterday & cum back 2 huston on sundy. I had a pretty good trip & will tell yu some of it but not all on account it wood take 2 long. I did not stay 2 no hotel on account they was all full befoar I gotten there & besides I remembered that the last time I was down there I borten me a plase 2 stay & then did not sleep none.

I ain't stingy hunny but I do not sea no reesen for me 2 spend munny foolish for nuthin, so I jest set in the ford & slep the few minnits whitch I had for sleepin.

neether am I goin 2 tell yu who I tooken down there with me on account I hav not told her nuthin about yu & it wood not be fair for yu 2 no about her & her not 2 no about yu, & ennyway hunny yu need not 2 werry on account of annything like that because yu no that I am yore trew sweety, so what do yu care.

ennyway yu wood not like 2 hav gone 2 galveston with me on account yu aint got no bathin sute & they aint got none at the bath house whitch wood show off yore girlish figger 2 the best advantage on account they do not make them like yu is made on account of yu bein so unusual. I gess hunny we will hav 2 git yu a spechul bathin sute made to measure if it is enny laddy bathin sute makers, but I aint goin 2 stand for no man sute maker takin yore measure. but we will sea about that sum other time & then yu can go 2 galveston with me.

when we do I want us 2 hav our pitchers tooken in our bathin sutes because I bet it wood be a nock out that wood beet sum of the pitchers whitch is stuck up down their for samples of fools whitch has had theres tooken. Like it is peepul just smiles while they pass along & I wood like for us 2 fix it so they will stop and laff out lowd.

but I was startin off 2 tell you about mi trip & am kinder gittin off of the subjeck. it was kinder diffrenter this time from what it was the last time I was down there on account this time sum of the bathin girls went in2 the watter. I tooken a cupple of swims whitch is moar baths than slim has had this year unlessen he fell in sumwheres, & then I desided I had better hed for huston on account I had alreddy bort her three meels & thort I miteswell git her back home about supper time & mabe git invited 2 eat at her house & git back a little of what I had spent.

well I starts out in the heet of the day & found out sumthin elst new about mi ford whitch I think mabe I will git me a patent on it & sell it 2 henry because I bet he does not no nuthin about it. that is that if yu treet it right yu do not hav 2 hav no electrick ignishun 2 make a ford run. I hit on this patent kinder by axcidents, because it is so much watter in galveston that yu just dont notise it, & that is the reesen that I did not notice that mi radayter was leekin till the car got 2 actin up kinder funny & I thort I had better stop 2 sea what was the matter it was so mutch smoke cumin out. well when I cut her off she did not pay me no mine & kept rite on runnin.

so I do not no for shure that I will hav time 2 figger on it, but it looks like mabe I cood make a model of a ford car whitch wood not hav no radyater on it whitch wood not need no ignishun or spark plugs, but wood just run on its own account. that wood be quite a savin on the fob of the automobiles & wood be a good thing otherwise, because watter in radyatters is a great economick waste. watter is cheep, but I wood a giv a dollar for a bucket full last sundy when I was out in the middle of a prary where it looked like it had not raned in a hundred yeres & the sun was shinin kinder hot & just far enuff 2 1 side that the ford wood not make no shade & everyboddy passin by kinder grinnin at me because they thunk I had driv way out there 2 find a place 2 park.

now that is 1 of the ambigerties of natur, hunny. if that car wood a bin in good runnin order & it had bin moon lite insted of sun shine whitch was beatin down on us, it wood a just bin grand 2 park out there in the cuntry. also everyboddy whitch passed then wood a stopped 2 no if we needed enny help. but when yu do need help well they just amble rite on bi.

but ennyhow I finly got 2 town & gotten her fixed up so that I cood cum down 2 sea yu this sundy if it was not that I hav got a date 2 go 2 bomont & port arther whitch will keep me from cummin. hunny I shore do hate it that I am so bussy that I do not git no chances 2 cum down 2 sea yu, but yu no how it is hunny.

also I am afred that I will not git 2 go 2 that meetin at Ft. worth whitch I was tellin yu about I was goin 2 make the principle and intrest speach at the meetin of the oil scouts. I shore do hate 2 disappoint the boys whitch is expectin me, but I am goin 2 be so bussy with sum other matters that I just cant go. I shore did want 2 make that trip for one reesen if no other & that was 2 show sum of them aspirin yung oil scouts what they can look forward 2 in this werld if they will just foller mi example.

I was onest a oil scout miself, & now look what I am?

when I scouted the drake well it was not noboddy noed me atall, & now I am famust wherever it is oil. it was all because I gotten fired off a scoutin job for bein drunk & not sendin in no report when the lucas well cum in at bomont. after that I started in studyin the geeology bizness & lernin other things about the oil bizness in between times.

1 thing has led on 2 anuther until I hav got pretty well fixed in the oil bizness if mi step may wood just let the old man giv me mi just deserts out of them arkansaw wells.

but ennyway hunny it will show yu that I am not kiddin about it when I say I am 2 bussy 2 cum down 2 sea yu, because I am not goin 2 ft. werth on account I am 2 bussy down hear.

well I aint got nuthin elst 2 rite 2 yu about that I can think of rite now so I will close & sea if I can consentrate mi mine on sum kind of a invenshun for the oil bizness on account I hav not did nuthin along that line for sum time on account of me gettin interested in radyo & fords & patents for them.

I will rite 2 yu about mi trip 2 bomont next week after I no what I do, like it is now I only no that I am goin.

yore lovin paul.

Celebration at Louann

The annual Oil Men's Stampede Celebration will be held at Louann, Ark., July 3, 4, 5 and 6 under the auspices of the Louann Chamber of Commerce. Invitations are being sent to officials of all operating oil companies, and replies received so far indicate a large attendance for the gathering. The principal event of the celebration will be a buffalo barbecue July 5, at which function several speeches will be made.

McCorkle Incorporator of Company

Fort Worth, Texas.—The Capital Oil & Gas Company has been organized with a capital stock of $50,000 with offices at Breckenridge and Fort Worth. Stephen R. McCorkle, formerly head of the McCorkle Pipe Line Company, which undertook to built a pipe line system last year from Southern Oklahoma to the Gulf Coast, C. V. Bricker and R. H. McNeill are incorators of the new concern.

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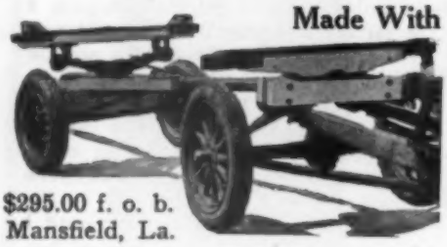

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Blowout Preventer Is Popular in South Texas

Houston, Texas.—The Cameron Iron Works, of this city, manufacturers of oil field equipment report a growing popularity of their blowout preventer. During the past few months six of these preventers have been sold to the Houston Oil Company for use on gas wells in South Texas. Two of the preventers were shipped to Edna, Jackson County, one went to Goliad, in Goliad County, and three went to Live Oak County, where the Houston Oil Company has extensive holdings on prospective gas land and also numerous gas wells. It is from Live Oak County that the Houston Oil Company will draw gas for its big gas line into Houston.

The Cameron Iron Works is further boosting its blowout preventer by a recent bulletin describing this equipment in detail. The folder contains eight pages and is amply illustrated with cuts showing construction of the preventer. Copies will be mailed upon request to the Cameron Iron Works, Houston, Texas.

New Interest in Wildcat Area Adjoining Luling

Luling, Texas.—New wildcats and a demand for acreage by major companies are the latest developments at Luling and Seguin.

Although the United North and South's Callahan well has been reported to be producing only four or five barrels daily, it has been connected with the Magnolia's pipe line, which runs between Luling and the Dale oil field. From logs of other nearby wells it is believed that the Callahan is one of the edge of a new Caldwell pool. An extensive drilling campaign seems certain for the near future.

Hoese No. 1, wildcat of J. M. Davis on the Augusta Hoese farm in Western Guadalupe, has been spudded in. This test is near Seguin and is situated in a section where distinct fault lines have been traced out. Major companies are also holding extensive acreage in that part of Guadalupe.

A contract for a well on the Dovie Inscore tract was let by the Seals Creek Oil Company. It is the company's idea to test all formations where oil showings have been found in other wells.

No. 1 Vetter of Scrivener et al, near the Geronimo Creek and seven miles northeast of Seguin, is preparing to spud in. Other wells operating near Seguin are: McClannahan et al No. 1 Lenz, resumed operations at 1050 feet and Jennings et al No. 1 Vogel, drilling at 1230 feet.

The United North and South Oil Company is extending its holdings toward Prairie Lea. A large block of acreage is also reported to have been taken for wildcat tests in the vicinity of Belmont in Guadalupe County.

Development of the Big Lake Oil Field

(Continued from page 42.)

side of the field, but no fault can as yet be postulated.

The rock column penetrated by the drill in the Big Lake field is very different from that found beneath the oil fields of East Texas and the Gulf Coast. The accompanying geologic column is a generalized section of the field to the oil pay. In it no mention is made of the unconformities in the Permian; nor are any of the formational subdivisions of the Permian shown. The purpose of the section is to give the operator a general knowledge of the beds which must be drilled through in the Big Lake field to reach the pay horizon.

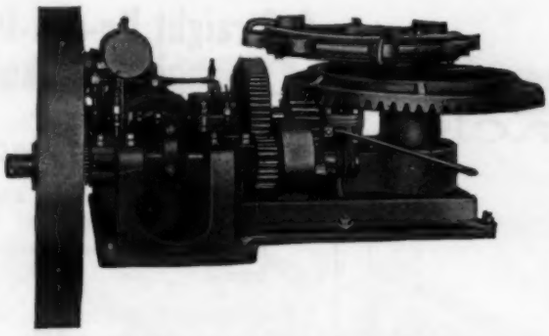
The most startling feature to the layman interested in geology is the presence of a mass of salt, averaging 540 feet in thickness, in the Big Lake field. Before salt water will precipitate salt from solution, it must be evaporated to one-tenth of its original volume. Considering this fact the mind is staggered when one endeavors to conceive of the stupendous amount of salt water that must have been evaporated to precipitate over 500 feet of rock salt in a blanket covering hundreds of square miles, for this thick Permian salt deposit is found under a large part of West Texas.

To conceive of the manner in which this salt mass was deposited, the reader must imagine a great, inland ocean of salt water in Permian days in West Texas—an ocean that, from time to time, must have had an outlet to the Pacific in order to get fresh supplies of saltwater, but which was, no doubt, a large part of the time separated from the main oceanic waters of the Pacific—an inland salt sea of turbid, shallow waters, fluctuating in depth, upon which the sun beat down continually during hundreds of thousands of years, evaporating the water until they became supersaturated with salt, and were forced at intervals to precipitate beds of salt, which are those today penerated by the drill in the Big Lake field and in other parts of West Texas.

Shipments From Sabine Pass

Coastwise shipments of bunker, refined and crude oil from the Sun Oil Company's terminals at Sabine Pass totaled 395,586 barrels during May, according to statistics given out by the company recently.

Clintonville, Illinois. — The Four Wheel Drive Auto Company, Clintonville, Wisconsin, announces the promotion of E. M. McLean, former advertising manager, to the position of general sales manager. Mr. McLean has been with the Four Wheel Drive Auto Company since 1916. The company manufactures trucks suitable for oil field use.



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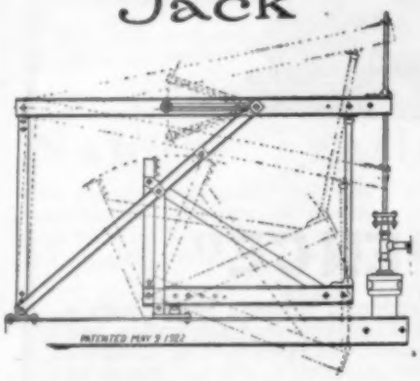

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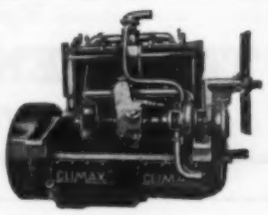

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New Methods in Gas Well Operation

(Continued from page 47)

Bh, required at the well head to hold the quantity of gas flowing to any desired percentage of the absolute open flow, Fs, may be determined, when the quantity of gas flowing, the well head pressure and the rock pressure at the well head are known the absolute open flow may be determined without blowing the well.

All wells in a given field will have characteristic curves similar to the one shown on Figure 2. It is believed that these curves will hold over the entire life of the well, as the rate of decline in rock pressure is about the same as the rate of decline in open flow. Data collected and compiled by the Bureau of Mines from several different fields indicate that the decline curves for rock pressure and open flow are approximately parallel.

Method of Determining Absolute Open Flow

When the rock pressure of a well and the delivery under a given well head pressure are known the absolute open flow may be determined. For example, in the well (1700 feet in depth) from which the data plotted on Figure 1 were obtained the rock pressure, measured at the well head, was 636 pounds per square inch absolute, and the flow through the tubing, under a well head back pressure of 600 pounds per square inch, was 292,000 cubic feet per 24 hours. A column of gas at this pressure, and 1700 feet in depth, exerts a pressure of 25 pounds per square inch due to its weight. Therefore the absolute rock pressure at the sand is 656+25=681 pounds per square inch. The back pressure on the sand, corresponding to the well head pressure of 600 pounds, is 623 pounds. In the case under consideration this was determined by measuring the pressure at the top of the siphon line and correcting for the pressure due to the column of gas in the siphon line. If there were no siphon line installed this pressure could be determined from a formula applicable to the flow through the tubing. The back pressure on the sand is

$$\frac{623}{681} \times 100 = 91.75$$

per cent of the absolute rock pressure. The curve of Figure 2 shows that when the back pressure is 91.75 per cent of the absolute rock pressure the quantity flowing is 29.7 per cent of the absolute open flow. Therefore the absolute open flow is

$$292 \times \frac{100}{29.7} = 983$$

M. cubic feet per 24 hours.

Method of Determining Well-head Pressure Required to Give a Definite Delivery

The back pressure that must be held on the sand to restrict the flow to any desired percentage of the absolute open

flow may be determined from the curve of Figure 2. For example, the curve shows that if the flow is to be restricted to 196 M. cubic feet, which is 20 per cent of the absolute open flow, the back pressure of the sand must be held at 95.3 per cent of the absolute rock pressure, or 649 pounds per square inch. Curves G and B of Figure 1 show that when the back pressure on the sand is 649 pounds per square inch the well-head pressure in the tubing is 625 pounds per square inch.

In like manner it can be shown that if 196,000 cubic feet per 24 hours is to be produced through the siphon line, the well head pressure must be held at 595 pounds per square inch.

The Use of Orifices

The discussion of the preceding pages showed the relation between the back pressure on the sand and the quantity flowing from the well, provided the quantity is expressed in terms of the absolute open flow. It also showed the relation between the back pressure on the sand and the pressure at the well head. To make effective use of this information, a simple and accurate means for controlling the flow of gas is necessary. Valves and regulators are difficult to set for any particular rate of flow and will not hold the rate constant.

Unless a meter is installed at each well connected to a system, no knowledge is available of the volume delivered from the various wells. One well may be supplying an amount far in excess of what it should while another is delivering too small a quantity. The most satisfactory operation of any field or group of wells is to take quantities of gas from each well according to local conditions governing that particular well.

An extensive study of the flow of gas through small orifices under high differential pressures, conducted by the writers and their associates, has given the information necessary for the design of orifices to control the flow of gas from wells.

Laws Governing the Flow of Gas Through Orifices

There are two general conditions governing the flow of ordinary gases through orifices, which are:

1. Where the ratio of the pressure on the downstream side of the orifice to that on the upstream side is less than about 0.56 (the critical ratio of pressures which is slightly different for different gases) the flow of gas depends upon the upstream pressure and is independent of the downstream pressure.

2. Where the ratio of pressures across the orifice, as above described, is greater than about 0.56 the flow of gas is dependent upon both the upstream and the downstream pressures.

Equations for the flow of gas

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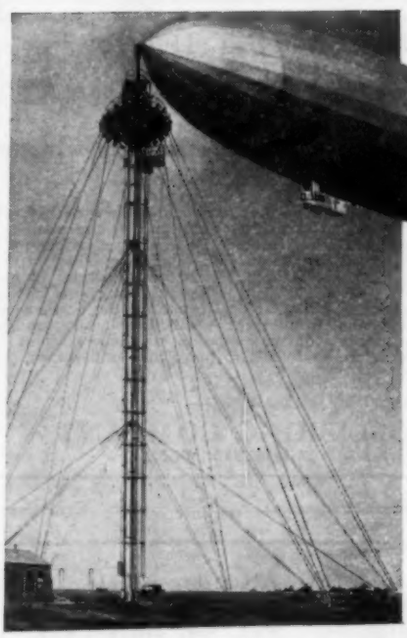

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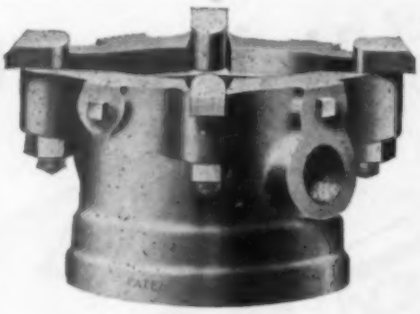

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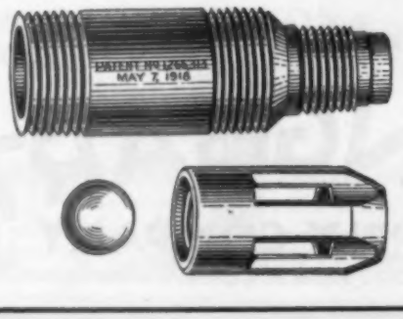

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through orifices under the two conditions stated are:

(1) $Q = Kd^2f \frac{P_1}{\sqrt{T\,G}}$

(2) $Q = Cd^2f \frac{[P_1\,(P_1 - P_2)]^n}{\sqrt{T\,G}}$

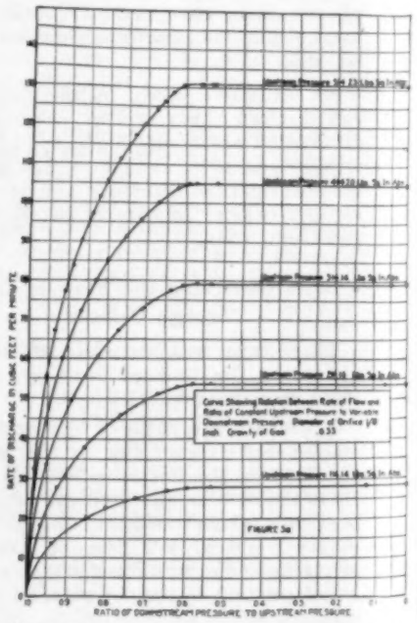
where

Q = the quantity of gas flowing, cubic feet per 24 hours.
K = a constant for the orifice, determined from experimental data.
C = a constant for the orifice, determined from experimental data.
n = an exponent determined by experiment.
d = diameter of orifice in inches.
P_s = the absolute pressure on the stream side of the orifice, pounds per square inch.
P^2 = the absolute pressure on the downstream side of the orifice, pounds per square inch.
f = factor to correct for the deviation of gas from Boyle's law. It is determined by experiment.
T = absolute temperature of the gas on the upstream side of the orifice, degrees F.
G = Specific gravity of the gas, air = 1.0.

The above equations will give the quantity of gas flowing under all conditions when the proper values of K, C, f and n are used.

Method of Determining the Critical Ratio of Pressures and Orifice Coefficients

An orifice was installed in a run of pipe with pressure taps made at 2½ pipe diameters upstream and 8 pipe



diameters downstream. Pressure taps were also made at the flanges. This gave two methods of measuring as used in standard orifice meter practice. Temperature measurements were taken at points above and below the orifice.

Thermometers fitted through stuffing boxes with their bulbs in direct contact with the gas were used for reading temperatures. Before using thermometers in this manner it is necessary to calibrate them for pressure effect on their bulbs. Tests on thermometers, up to 1000 pounds per square inch pressure, have shown that an error of about 1.3 degrees per hundred pounds occurs. The effect of pressure is to force the mercury up in the capillary tube of the thermometer and make it read too high.

A calibrated funnel meter for measuring the volume of gas flowing, was installed below a valve which was located about 20 pipe diameters downstream from the orifice. A throttling manifold was placed upstream from the orifice to allow close control of the volume flowing. All pressure measurements above 30 pounds per square inch were taken with dead weight testers; below this point they were read on mercury columns.

Tests were run, measuring the rate of flow at different ratios of pressures both above and below the critical ratio. Figure 3 shows a typical curve obtained from a test when the downstream pressure was held constant and the upstream pressure was varied. Figure 3a shows a similar set of curves where the upstream pressures were held constant and the downstream pressures were varied. The curves are straight lines above the critical ratio of pressure, but the change from the curved sections to the straight sections is not clearly defined. However, the exact point may be found by plotting the data obtained from tests upon logarithmic paper and determining the equations will give the critical ratio of lines. A simultaneous solution of these equations will give the critical ratio of pressures.

The value of the exponent n in the equation

$$Q = Cd^2 f \frac{[P_1 (P_1 - P_2)]^n}{\sqrt{T G}}$$

is determined by the slope of the line when the data are plotted on logarithmic paper. A large number of tests were conducted on the flow through orifices ranging from 0.1 inch to 1.5 inches in diameter and under pressure conditions ranging from 600 pounds to atmosphere. The data from these tests indicate that, for the gas used, the value of n is about 0.46. When this value of n is used and the equation is solved for C, the value of C is found to be practically constant over the entire range of pressure ratios to which the equation applies. When n is taken as 0.50, which is the value ordinarily used in this equation, the value of C varies with changes in the pressure ratio.

Additional tests, and further study of experimental data already obtained, are necessary before definite statements

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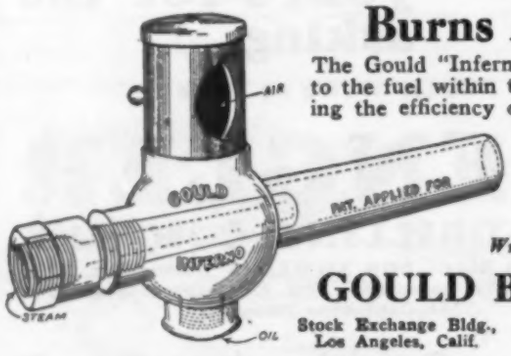

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can be made regarding the numerical values of K, C, f and n.

Method of Designing Orifices

When the desired delivery of gas and well head pressure have been determined the size of the orifice required to control the flow is determined by solving for D in one of the equations for flow through orifices. When the line pressure is less than about half of the well pressure equation (1) is used; when it is greater, equation (2) is used.

Installation of Control Equipment

The installation as made on 25 wells in the Mid-Continent field, which have been operating under this system of control for many months, is shown on figure (4). The controlling orifice is placed between the flanges. The pressure taps are taken off at the points shown. One pen on the gauge records the upstream pressure, the other the downstream. Where the flow of gas is

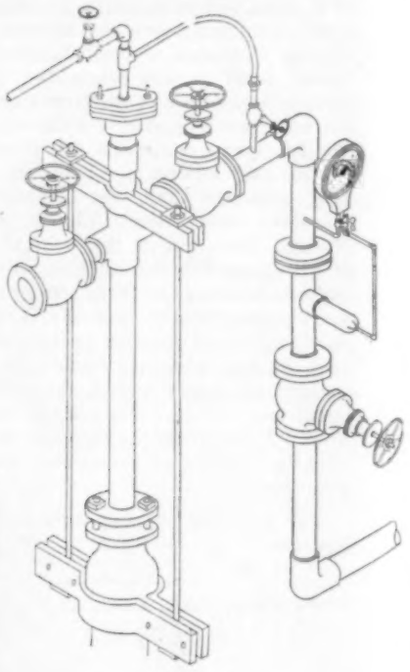

Figure 4.

always above the critical ratio a single gauge is all that is required to measure the flow. If the line pressure is more than about 56 per cent of the well head or working pressure the bi-record gauge is used. The difference between the pressures recorded by the two pens is the differential across the orifice and is used with the upstream pressure in formula (2) for determining the quantity of gas flowing.

Where the line pressure ranges from less than 56 per cent of the working pressure to slightly more than that amount a single recording gauge may be used and the amount of gas flowing may be determined by the equation (1) without introducing any serious error

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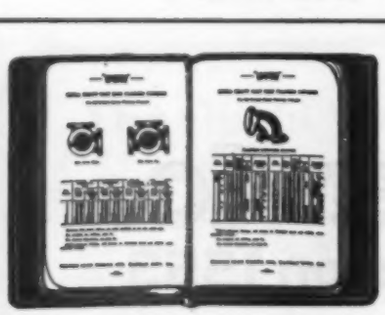

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when the ratio of pressure is slightly in excess of the critical ratio.

Orifice for Well Control

Where a well is controlled by an orifice a constant back pressure will be maintained on the gas sand regardless of the line pressure as long as the flow velocity is critical. Where the line pressure varies so that the flow through the orifice takes place below the critical ratio of pressures the back pressure will be somewhat increased. In no case can the back pressure be lowered below the point for which the orifice was calculated. This condition at a well is highly desirable and will extend its life and increase its ultimate yield.

Conclusions

In addition to the saving of enormous quantities of gas by eliminating open flow measurements, some of the other desirable features of the above method of control and operation are:

1. A predetermined rate of flow, from wells, can not be exceeded from any external cause as long as the control orifices are left undisturbed. This will eliminate serious trouble caused by water which generally appears in gas wells when they are worked too hard. The elimination of water troubles will greatly increase the life of gas wells.

2. The orifice control permits the operation of high pressure wells carrying high gasoline content in extreme weather conditions. The writers have had the orifice system of control on a well with 675 pounds rock pressure, which always froze up in cold weather when operated in the usual manner. This well worked against a line pressure of 200 pounds during the past winter when the temperature was below zero without ever freezing.

3. Orifices may be designed to work individual wells at their most economical rates. When this is done the operator has a method of knowing from day to day the exact volume being delivered from individual wells instead of the total from a field.

4. The time required to change the rate of flow from any well is very short. It is only necessary to take out one orifice disc and insert another.

5. The gas wasted in a single open flow test will in most cases pay for the installation of the control equipment.

6. The charts from the recording gauges may be compared to steam engine indicator diagrams. They will tell what is happening in the well and will help the operator to keep his wells in good condition at all times.

7. The control equipment measures gas as accurately as ordinary orifice meters.

8. Control by orifice is positive, regulation by valves is guess work at best.

Acknowledgements

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R. A. Cattell, superintendent of the Bartlesville station of the Bureau of Mines, under whose direction the work was conducted, criticized the manuscript and offered valuable suggestions for the presentation of results. Thanks are also due to the management of the Indian Territory Illuminating Oil Company and the Oklahoma Natural Gas Company for furnishing wells used in field tests.

Geologists Meet in Dallas

Tulsa, Okla.—E. DeGolyer, vice president and general manager of the Amerada Petroleum Corporation and newly elected president of the American Association of Petroleum Geologists, a visitor in the city last week, made the announcement that the 1926 geological convention would be held in Dallas, Texas, in March.

Booklet for Engineers

The Dodge Manufacturing Corporation, Mishawaka, Indiana, has just released an elaborate book visualizing the engineering, foundry and machine shop facilities of that company available for the manufacture of special machinery and equipment. The book also shows a wide range of special equipment built by the company.

A copy of this book will be sent to executives of engineering companies as well as manufacturers who prefer not to build their own special machinery, but to use their plant equipment for the manufacture of their standard products.

Shamrock Reorganized

Wichita Falls, Texas.—The Shamrock Oil Company has been reorganized with a capital stock of $5000 following the recent sale of the bulk of its producing properties and undeveloped leases to Prairie Oil and Gas Company for a cash consideration of $2,300,000. The incorporators of the new Shamrock Oil Company are C. H. Clark, T. H. Harbin and J. M. Baldridge.

Dr. H. Foster Bain, former director of the United States Bureau of Mines, will take up his office as Secretary of the American Institute of Mining and Metallurgical Engineering on July 1. Dr. Bain's connection with the Bureau of Mines terminated recently when he tendered his resignation to Secretary Work of the Department of the Interior.

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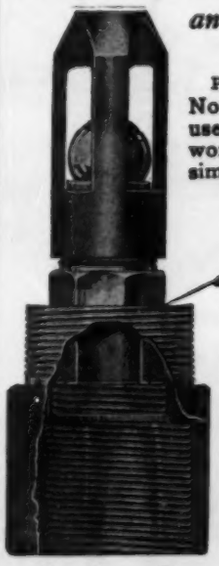

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Britisher Officiates at Horrible Badger Fight

Notwithstanding the stringent laws of Texas there are crimes committed in this fair state which for bloodthirstiness and cruelty pales the dark ages and makes the bullfight of Mexico look like a Sunday school picnic.

A specific incident took place in Brownsville, Texas, Saturday evening, May 16th, 1925, and was one of the many forms of amusement used to entertain the visiting delegates of the Advertising Clubs of the World.

Matamoros, Mexico, one of the nearest wet cities to Houston, furnished the liquor, which aroused the viciousness of the delegates, and the more they imbibed the louder they cried for chicken fights, dog fights and bull fights. It being Saturday night this could not be arranged, but was on the calendar for the Sunday entertainment.

Frank Cavenagh, District Sales Manager, Darling Valve and Manufacturing Company, Houston, stated that through his influence with the mayor of Brownsville, he could arrange a badger fight that night. With little or no delay the crowd motored back to the United States, where permission was given by the chief of police to stage the fight. A dog was quickly procured and he showed the results of many previous battles, being shy a left hind foot.

The badger was also bought for the occasion and upon its arrival, carefully closed up in a box with a chain disappearing through the slip door, it was the immediate cause of heavy betting. Men bet $100 even money on badger or dog as though they were millionaires. No bets were refused.

A fist fight was narrowly averted over the selection of the man who was to hold the dog. He finally persuaded the crowd that he had no money up on the fight and was promptly accepted.

The honor of braving the badger in his lair was offered to Victor C. Stokes of Bushey Herts, England, and he accepted, after he had taken an oath he would not bet on either animal. Mr. Stokes, a true British sportsman, showed great courage and never flinched in the dangerous operation of pulling the badger forth to battle.

Mr. Stokes showed great courage in the dangerous operation

The fight, brutal as it is, referred to, furnished more than the usual amount of pleasure, largely due to Mr. Stokes' sportsmanship.

As a token of esteem to Mr. Stokes he was immediately made an honorary citizen of the State of Texas, and presented with a loving cup, which he carried back to Matamoros, where it was filled with 8% beer many times, and emptied as a loving cup.

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Mike: "What was it?"

"He said that the swatest mimories in loife are the ricollictions of things forgotten!"

The New Stenographer

They sent us a new stenographer this morning. We might have missed her but for George, who in a whisper said "Sh! Look behind you, Hank. Some dame!" So we turned around and looked, and Ah! boys, from afar off came the faint silvery chimes of ancient bells—the years rolled back like a scroll and a dim, sweet trail of lilacs stole down from the first dawn-kissed garden of creation.

The breath of the morning stirred little ripplies on the breast of the sleeping sea, and the stars paled one by one and shrank back into the receding night. Tiny blades of grass raised their green spears from the earth and the dewdrops nestled in them tenderly. The down breeze swept the trees, and the leaves whispered joyously that night had gone.

On the slopes of Olympus the gods shook off their slumbers and marveled at the jewel-studded world beneath—a world that lifted its dewy freshness to the sun as Juno herself might have offered her ripe and luscious lips to Jove.

And then, boy, this here stenographer said to me, "Say, kid, ain't there any carbon paper around this joint?"—The Bookanwrap.

Professor—"Can any person in this class tell me what steel wool is?"

Pie Bate—"Sure. Steel wool is shearings from hydraulic rams."

Jimmy Carroll—"Waiter what kind of meat is this?"

Waiter—"Spring lamb, sir."

Jimmy—"I thought so. I've been chewing on one of the springs for an hour."

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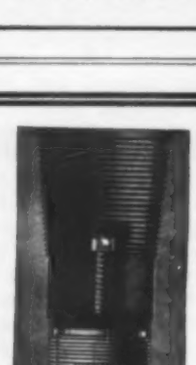

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Fuel Oil—
Gulf Refining Co.
Sinclair Refining Co.

Gasoline Extraction Compressors—
Continental Supply Co.
Bessemer Gas Engine Co.
Hope Engineering & Supply Co.
Sullivan Machinery Co.

Gauge Cocks—
The Lunkenheimer Company

Gauges—
Continental Supply Co.
Oil Conservation Engineering Co.
Westcott and Greis

Gauges, Oil—
The Lunkenheimer Company

Gas Engines—
S. M. Jones Co.

Gas Generators—
Baird Supply Co.

Gas Traps—
American Tank Co.
Continental Supply Co.
Lorraine Corp.
Smith Separator Co.
Trumble Gas Trap Co.

Gasoline and Oil Storage Tanks—
American Tank Co.
Butler Mfg. Co.
Graver Corp.
Continental Supply Co.
Kansas City Struct. Steel Co.
Parkersburg Rig & Reel Co.
Petroleum Iron Works Co., The

Genuine Wrought Iron Casing—
Reading Iron Co.

Geologists—
Joseph L. Adler
Alexander Deussen
David Donoghue
Edwin B. Hopkins
Foster & Reiter
Heath M. Robinson

Governors—
Gardner Governor Co.

Grips and Clamps—
Continental Supply Co.
J. P. Ratigan
W-K-M Co.

Heat Exchangers—
Brown Welding & Machine Co.
Hope Engineering & Supply Co.

Hoists—
Emsco Steel Products Co.

Hose—
Continental Supply Co.
Gustin Bacon Manufacturing Co.

Houses—
Crain Ready-Cut House Co.

Iron Casing—
Superior Tube Company

Laboratory Equipment—
Continental Supply Co.
Fort Worth Laboratories

Lapwelded Steel Boiler Tubes—
The Tyler Tube & Pipe Co.

Lighting Systems—
Bridgeport Machine Co.
Continental Supply Co.
Westinghouse Elec. & Mfg. Co.

Line Pipe—
Continental Supply Co.
Republic Supply Co.
Reading Iron Co.

Lumber—
Robertson-McDonald Lumber Co.

Lubricators—
The Lunkenheimer Company

Manufacturers—
Robinson Packer Co.

Maps—
Heydrick Mapping Co.

Meters—
Continental Supply Co.
Westcott and Greis

Motors—
Twin City Co.
Westinghouse Elec. & Mfg. Co.

Oiling Devices—
The Lunkenheimer Company

Oil Engines—
McIntosh & Seymour Corp.

Oil Field Equipment—
H. Rickman

Oil Field Supplies—
American Tank Co.
Bridgeport Machine Co.
Butler Mfg. Co.
Continental Supply Co.
The Cunningham Co.
C. C. Fetty
Frick-Reid Supply Co.
Graver Corp.
Erle P. Halliburton
Jarecki Mfg. Company
International Supply Co.
Kansas City Struct. Steel Co.
Lee C. Moore & Co.
Lucey Manufacturing Corp.
The Lunkenheimer Company
The National Supply Cos.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Peden Iron & Steel Co.
Pelican Well Tool & Supply Co.
Petroleum Iron Works Co., The
Republic Supply Co.
Regan Forge & Engineering Co.
Robinson Packer Co.
Smith Separator Co.
Southern Brass Mfg. & Plating Co.
Superior Tube Company
United Iron Works, Inc.
W-K-M Co.
J. H. Williams & Co.

Oil Well Casing—
Continental Supply Co.
Frick-Reid Supply Co.
Republic Supply Co.
Superior Tube Company

Oil Well Cementing—
Erle P. Halliburton

Oil Well Shooting—
U. S. Torpedo Co.
Zero Hour Torpedo Co.

Overshots—
Baash-Ross Tool Co.
Continental Supply Co.
LeBus Rotary Tool Works

Packers—
Continental Supply Co.
The Guiberson Corp.
Layne & Bowler
Robinson Packer Co.
Pelican Well Tool & Supply Co.
Regan Forge & Engineering Co.
W-K-M Co.

Packing—
Continental Supply Co.
D. F. Connolly Agency
Gustin Bacon Manufacturing Co.
Frick-Reid Supply Co.
The National Supply Cos.
Peden Iron & Steel Co.
Pelican Well Tool & Supply Co.
Republic Supply Co.

Paints—
Continental Supply Co.
Peden Iron & Steel Co.

Panel Boards—
Westinghouse Elec. & Mfg. Co.

Patents—
Hardway & Cathey
Jack A. Schley
Jesse R. Stone

Pipe Grips—
Continental Supply Co.
W-K-M Co.

Pipe—
A. M. Byers Co.
Continental Supply Co.
Frick-Reid Supply Co.
F. W. Heitmann Co.
Harrisburg Pipe & Pipe Bending Co.
International Supply Co.
The National Supply Cos.
Oil Well Supply Co.
Peden Iron & Steel Co.
Reading Iron Co.
Republic Supply Co.
Superior Tube Company
Williamsport Wire Rope Co.

Pipe Insulation—
Johns-Manville, Inc.

Pipe Screwing Machines—
Buckeye Traction Ditcher Co.

Pipe Threading Machines—
Jarecki Mfg. Company
Standard Engineering Co.

Pipe Vises—
J. H. Williams & Co.

Pipe Wrenches—
Continental Supply Co.
Dunn Mfg Co.
The Guiberson Corp.
Trimont Mfg. Co.
LeBus Rotary Tool Works
Republic Supply Co.
J. H. Williams & Co.
Wickwire Spencer Steel Corp.

Portable Buildings—
Butler Manufacturing Co.
International Derrick & Equipment Co.

Portable Drilling Rigs—
Bridgeport Machinery Co.
Continental Supply Co.
Lee C. Moore & Co.
Parkersburg Rig & Reel Co.
The National Supply Cos.

Pulleys—
Continental Supply Co.
International Derrick & Equipment Co.
Lee C. Moore & Co., Inc.

Pulling Machines—
Clark Machine Co.
Continental Supply Co.
Iron King Mfg. Co.
Safety Pulling Machine Co.

Pumps—
Axelson Machine Co.
Bradford Motor Works
Continental Supply Co.
D. & B. Pump & Sup. Co.
C. C. Fetty
Frick-Reid Supply Co.
Gardner Governor Co.
Gasc Pump & Burner Mfg Co.
Goulds Manufacturing Co.
Jarecki Mfg. Company
Lucey Manufacturing Corp.
National Transit Pump & Machine Co.
Northrup Equipment Company
Oil Well Supply Co.
Pelican Well Tool & Supply Co.
Republic Supply Co.
Southern Engine & Pump Co.
Texas Oil Pump Co.
United Iron Works, Inc.

Portable Compressors—
Continental-Supply Co.
Sullivan Machinery Co.

Pumping Engines—
McIntosh & Seymour Corp.

Pumping Equipment—
Northrup Equipment Company
Shaffer Specialty Co.

Pumping Powers—
Continental Supply Co.
C. C. Fetty
Frick-Reid Supply Co.
International Supply Co.
Jarecki Mfg. Company
Jensen Bros. Mfg. Co.
Kansas City Hay Press Co.
Spence Machine Co.

Regulators—
Westcott and Greis

Refined Products—
Gulf Refining Co.
Humble Oil & Refining Co.
Magnolia Petroleum Co.
Sinclair Refining Co.
Texas Co.

Recorders—
Fort Worth Laboratories

Refinery Equipment—
American Tank Co.
Butler Mfg. Co.
Continental Supply Co.
Graver Corp.
Oil Conservation Engineering Co.
Petroleum Iron Works Co., The
Republic Supply Co.
Smith Separator Co.
Titusville Iron Works
United Iron Works, Inc.
Westcott and Greis
Wyatt Metal & Boiler Works

Rig Irons—
Bradford Rig & Reel Co.
Continental Supply Co.
International Supply Co.
Lee C. Moore & Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Republic Supply Co.

GUIDE FOR PURCHASERS—Continued

Rod and Tubing Protectors—
H. Rickman

Rotaries—
International Supply Co.

Rotary Rock Bits—
Continental Supply Co.
Hughes Tool Co.
Reed Roller Bit Co.

Rotary Fish Tail Bits—
Continental Supply Co.
Pelican Well Tool & Supply Co.
Regan Forge & Engineering Co.
Republic Supply Co.
W-K-M Co.

Safety Casing Clamps—
Shaffer Specialty Co.

Sand Reel Supports—
Shaffer Specialty Co.

Separators—
American Tank Co.
Butler Mfg. Co.
Continental Supply Co.
Lorraine Corp.
Smith Separator Co.
Trumble Gas Trap Co.

Specialty Manufacturers—
Shaffer Specialty Co.

Steel Bull Wheels—
Bradford Rig & Reel Co.
McIntosh & Seymour Corp.

Structural Steel—
Butler Mfg. Co.
United Iron Works, Inc.

Steel Derricks—
Continental Supply Co.
Emsco Steel Products Co.
International Derrick & Equipment Co.
Lee C. Moore & Co., Inc.
Parkersburg Rig & Reel Co.
Superior Tube Company

Steel Crown Blocks—
Continental Supply Co.
International Derrick & Equipment Co.
Lee C. Moore & Co., Inc.
Parkersburg Rig & Reel Co.
Superior Tube Co.

Steel Storage Tanks—
American Tank Co.
Butler Mfg. Co.
Continental Supply Co.
Graver Corp.
Petroleum Iron Works Co., The

Still Covering—
Johns-Manville, Inc.

Stuffing Boxes—
A. W. Fawcett

Strainers—
Continental Supply Co.
Emsco Steel Products Co.
Howard Smith Company
Layne & Bowler Co.
J. H. McEvoy & Co.
Pelican Well Tool & Supply Co.
W-K-M Co.

Special Steels—
Central Steel Co.

Steel Tanks—
Bradford Rig & Reel Co.

Sucker Rod Lines—
Continental Supply Co.

Sucker Rod Elevators—
The Cunningham Co.

Sucker Rod Hangers—
Lorraine Corp.

Sucker Rod Guides—
H. Rickman
A. H. Brandon

Sucker Rod Hooks—
The Cunningham Co.

Sucker Rod Sockets—
Baird Supply Co.
Bradford Motor Works
Brown Welding & Machine Co.
Continental Supply Co.
The Cunningham Co.
Shaffer Specialty Co.
Western Supply Co.

Sucker Rods—
Axelson Machine Co.
Continental Supply Co.
Columbus Sucker Rod Co.
D. & B. Pump & Sup. Co.
Dunn Mfg. Co.
Frick-Reid Supply Co.
S. M. Jones Co.
The National Supply Cos.
Oil Well Supply Co.
J. P. Ratigan
Republic Supply Co.

Swabs—
Continental Supply Co.
The Cunningham Co.
Shaffer Specialty Co.

Tank Bolts—
Continental Supply Co.

Tanks—
American Tank Co.
Butler Mfg. Co.
Black, Sivalls & Bryson
Continental Supply Co.
The Brownell Co.
Gantz Tank Co.
Graver Corp.
Kansas City Struct. Steel Co.
Maloney Tank Co.
Parkersburg Rig & Reel Co.
Petroleum Iron Works Co., The
United Iron Works
Wyatt Metal & Boiler Works

Tank Deadwood—
Robertson-McDonald Lumber Co.

Tank Equipment—
Continental Supply Co.
Johns-Manville, Inc.
Oil Conservation Engineering Co.
Parkersburg Rig & Reel Co.
Westcott and Greb

Tank Insulation—
Johns Manville, Inc.

Tank Roofs—
Johns-Manville, Inc.

Temper Screws—
Burns Tool Co.

Thermometers—
Continental Supply Co.
Fort Worth Laboratories

Timbers—
Robertson-McDonald Lumber Co.

Tongs—
Bridgeport Machine Co.
Continental Supply Co.
Dunn Mfg. Co.
Gulberson Corp.
LeBus Rotary Tool Works
Howard Smith Company
Pelican Well Tool & Supply Co.
J. H. Williams & Co.
Wilson & Willard Mfg. Co.
W-K-M Co.

Tool Joints—
Baash-Ross Tool Co.
Bridgeport Machine Co.
Continental Supply Co.
Emsco Steel Products Co.
Hughes Tool Co.
Pelican Well Tool & Sup. Co.
Regan Forge & Engineering Co.
Republic Supply Co.
W-K-M Co.

Tools (Fishing and Drilling)—
Acme Fishing Tool Co.
Bridgeport Machine Co.
Brown Welding & Machine Co.
Continental Supply Co.
Frick-Reid Supply Co.
Houston Engineers, Inc.
Hughes Tool Co.
International Supply Co.
Oil Well Supply Company
Peden Iron & Steel Co.
Pelican Well Tool & Supply Co.
Regan Forge & Engineering Co.
Republic Supply Co.
Star Drilling Machine Co.
Sullivan Machinery Co.
W-K-M Co.
Western Supply Co.

Toothless Slips—
LeBus Rotary Tool Works

Tractor Winch—
Rock Island Plow Co.
Twin City Co.

Traveling Blocks—
Baash-Ross Tool Co.
Continental Supply Co.
Lufkin Foundry & Machine Co.
Regan Forge & Engineering Co.

Tret-O-Lite—
W. S. Barnickel & Co.

Tubing Catcher—
Continental Supply Co.
Dunn Mfg. Co.
Gulberson Corp.

Tubing Lines—
Continental Supply Co.

Tubing—
Continental Supply Co.
Republic Supply Co.
Reading Iron Co.

Underreamers—
Bridgeport Machine Co.
Continental Supply Co.
Wilson & Willard Mfg. Co.

Vacuum Pumps—
Continental Supply Co.
Sullivan Machinery Co.

Valves—
Bradford Motor Works
Continental Supply Co.
Darling Valve & Mfg. Co.
The Charles N. Hough Mfg. Co.
Ludlow Valve Mfg. Co.
Norris Bros.
Northrup Equipment Company
Oil Conservation Engineering Co.
The Wm. Powell Co.
Pratt & Cady
Reading Steel Casting Co.
Reading Valve & Fittings Co.
Smith Separator Co.
Sour Lake Machine Co.
Southern Brass Mfg. & Plating Co.
Texas Oil Pump Co.
Westcott Valve Mfg. Co.
W-K-M Co.

Vapor Tight Insulated Tank Tops—
Johns-Manville, Inc.

Valves and Fittings—
Continental Supply Co.
Darling Valve & Mfg. Co.
D. & B. Pump & Supply Co.
Jarecki Mfg. Company
Ludlow Valve Mfg. Co.
Lufkin Foundry & Machine Co.
The National Supply Cos.
Peden Iron & Steel Co.
The Wm. Powell Co.
Pittsburgh Reinforced Brazing & Machine Co.
Pratt & Cady
Republic Supply Co.
Reading Steel Casting Co.
Reading Valve & Fittings Co.
United Iron Works
W-K-M Co.

Walking Beams—
Continental Supply Co.
International Derrick & Equipment Co.
Lee C. Moore & Co., Inc.

Welding and Cutting Equipment—
Continental Supply Co.

Working Barrels—
Axelson Machine Co.
Bradford Motor Works
Continental Supply Co.
D. & B. Pump & Sup. Co.
Howard Smith Company
Jarecki Mfg. Company
Northrup Equipment Company
Republic Supply Co.
The Charles N. Hough Mfg. Co.
Southern Brass Mfg. & Plating Co.
Texas Oil Pump Co.

Water Gauges—
Continental Supply Co.

Water Cans—
Continental Supply Co.
H. P. Gott Mfg. Co.

Water Softening Compound—
Ward Chemical Company

Wire Rope—
American Cable Company
Bridgeport Machine Co.
Continental Supply Co.
International Supply Co.
Regan Forge & Engineering Co.
Republic Supply Co.
The National Supply Cos.
Wickwire Spencer Steel Corp.
Williamsport Wire Rope Co.
Western Supply Co.

Wire Rope Fittings—
American Cable Company

Wire Rope Slings—
American Cable Company

Wire Line Clamp—
Western Supply Co.

Increase Your Production! WITH— KLEEN-A-WELL

Patent Pending

Removes Paraffin, Asphaltum, Gypsum or Salt, Cleans Tubing and Rods

SINCLAIR WYOMING OIL COMPANY
P. O. Box 1859, Casper, Wyoming
December 26, 1924

The Sullivan Company,
Memphis, Tenn.

ATTENTION MR. STURN.

Gentlemen:

Referring to your inquiry regarding result of Kleen-A-Well, beg to advise that we used one shot in Well No. 9 on our Salt Creek Property (as per your instruction). The result was very satisfactory.

This well was badly paraffined and production had almost ceased, making only about five barrels per day. After applying the Kleen-A-Well and bailing out, the production increased to 60 barrels per day and is still making this after 60 days.

We expect to use Kleen-A-Well in other wells in the near future. Yours very truly,

SINCLAIR WYOMING OIL COMPANY.

JUNIOR OIL COMPANY
308 Republic Building, Houston, Texas

The Sullivan Company, Memphis, Tenn.

Gentlemen:

Referring to your inquiry as to the result of the shot of Kleen-A-Well we used in Webb No. 1 in the Pioneer field, beg to advise we are very much pleased with it.

As per your instructions, we first pumped the well off; then dumped the Kleen-A-Well in between the casing and tubing, allowed it to stand thirty minutes and then started pumping.

The gas pressure increased immediately and the well made about four barrels of thick B. S., then an amber colored "clabber like" substance for over two hours, at the end of which time, the oil cleared up in five minutes and made good clean oil thereafter.

The well was making forty-five barrels before the shot of Kleen-A-Well was put in; the next twenty-four hour gauge showed seventy barrels. We waited several days until the production settled and find the well is making fifty-five barrels each twenty-four hours, a permanent increase of ten barrels a day.

We predict it will only be a matter of a short time before Kleen-A-Well will be in general use in the oil fields.

Yours very truly, JUNIOR OIL COMPANY.

A SULCO PRODUCT

Send For Booklet and Prices Today

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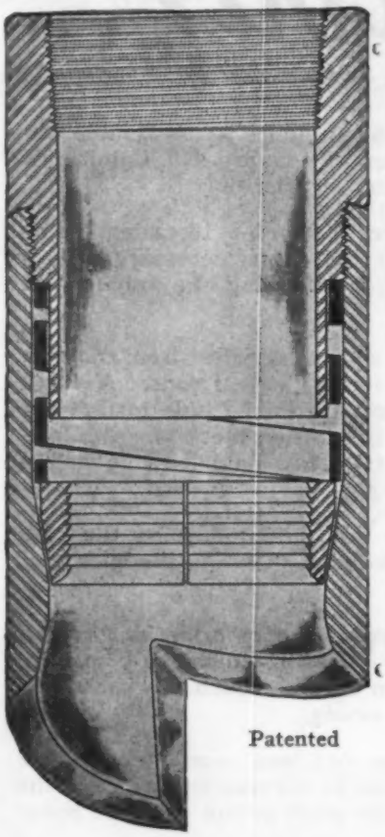
EXCLUSIVE EXPORT DISTRIBUTOR
Oilfield Equipment Company,
30 Church Street, New York, N. Y.

Made By The Sullivan Company, Memphis, Tennessee, and Montreal, Canada.

FOR SALE IN EVERY OIL FIELD THROUGHOUT THE WORLD

HERE END YOUR FISHING TROUBLES



Patented

LeBUS

G. F. LeBus

SLIPSOCKET OVERSHOTS

Ask the Man Who Uses a LeBus—Performance Is What Counts.

Quick Service on Special Sizes—

The fool-proof construction of the LeBus Slipsocket Overshot makes it the ideal tool. Equipped with slips for fishing for any sizes of plain pipe or tool joints that can enter the bowl. The LeBus is the heaviest constructed overshot made.

Carried by Supply Companies

Manufactured by the

LeBUS ROTARY TOOL WORKS
ELECTRA, TEXAS U.S.A.

LEBUS NEW EUREKA TONGS

Say you saw it in The Oil Weekly

How's this for a Corkscrew Rod?

Here is a ¾-inch x 25-foot Jones Acme Double Pin Rod which was used on the Gypsy Oil Company's lease, Bristow, Oklahoma District.

The well, 2980 feet deep, with 5-3/16 casing to the bottom, was sanded up and it was necessary to pull the tubing, which parted, allowing the tubing and rods to drop 100 feet.

Pieces of tubing and rods were fished from the hole until it was supposed to be clear of rods. A small string of tools was then run in the hole for several hours, after which the impression block was run, and it was found that the tools had pounded this sucker rod tight into the casing.

A center rope spear was used in fishing the rods out, which caught on the loop shown in the middle of the nest.

It took several hours jarring to bring this rod to the top of the hole, the effects of which can be plainly seen by the flat place on the rod, which was caused by pulling it through the casing.

Although this sucker rod was completely folded, there is no break or crack in the smooth surface of the rod other than the worn place where the rope spear caught.

The S. M. JONES Co. Toledo, Ohio.

"The Largest Manufacturers of Sucker Rods in the World"

Mid-Continent Office: 601 Wright Bldg., Tulsa, Okla.

when you think of Sucker Rods think of JONES! he specializes!

DO your offset wells come in before the other fellow's or do you lose time making derrick repairs while the other fellow is making hole?

SUPERIOR TUBE COMPANY

STEEL DERRICKS
CASING TUBING LINE PIPE
KANSAS CITY, MO.
PITTSBURGH TULSA DALLAS CASPER
ST. LOUIS

STEEL SUPERIOR DERRICK

"Ask the Driller Who Has Used One"

Say you saw it in The Oil Weekly

ENGINEERS & CONTRACTORS IN NATURAL GAS AND OIL

Service Which Is a Concrete and Established Fact

Many a good concern has promised, in all good faith, a service which, because of lack of experience in meeting unforeseen emergencies and conditions, it was unable to render.

In more than 20 years of highly specialized operation in the gas and oil industries, the Hope Company has met almost every sort of emergency, has learned how to anticipate any conditions, has organized an emergency and construction force adequate under all circumstances, has gathered special equipment equal to any demand.

And all this is the basis of Hope Service—a real and concrete service recognized throughout the industries it serves by hundreds of concerns who have used it to advantage and profit.

Hope Service

Engineering counsel, design, construction and contracting—in pipe lines for oil and gas, oil pumping stations, gas compressing and boosting plants, gasoline recovery systems, city and inter-city gas mains.

Unit Responsibility

ENGINEERS CONTRACTORS

HOPE Engineering & Supply COMPANY

DESIGNERS MANUFACTURERS

MT. VERNON, OHIO, U. S. A.

Say you saw it in The Oil Weekly

The O. W. Combination Rod Socket

This is the tool that will take the grief out of your sucker rod fishing jobs. We absolutely guarantee to do this.

Standard Sucker Rod Pin

Has only one set of slips. And they are long enough to allow the broken rod to enter far enough to insure gripping.

Special Tempered Steel Spring

A Steel plug that carries the three slips by means of three steel pins pressed into the plug

Slips are special heat treated and guaranteed not to break

Bowls or Guide Noses threaded to fit this end

Patent applied for

The O. W. Combination Rod Socket will catch any rod from 5/8-inch to 7/8-inch without changing slips.

It can be run in 2, 2½ and 3-inch tubing by simply changing the bowl or guide nose on the lower end.

Only one bowl furnished with each socket.

Manufactured and Sold by

C. A. Winston
P. O. Box 17
Bowden, Okla.

J. W. Oberbeck
4333 St. Louis Ave.
St. Louis, Mo.

The Right Oil

In The Right Place

Keeping down the friction load and reducing friction wear to a minimum is the problem of every operator of machinery. And there is but one solution of the problem—using the right oil in the right place.

The nature of the oil needed for the proper lubrication of bearings differs as widely as bearings do—in their type, their operating speeds and temperatures, the weight they carry at normal and peak loads, the frequency of their starting and stopping, and the method by which the oil is applied to the bearing surfaces.

All of these points have been carefully studied by our engineers, and Humble Zero Cold Test Oils have been scientifically prepared to meet certain operating conditions. Each Humble Oil is just right for the place where we recommend its use—you may depend on that—whether it be in your plant or in your automobile.

HUMBLE OIL & REFINING CO. HUMBLE OILS HOUSTON, TEXAS

The Humble Oil and Refining Company is a large user of both heavy and light equipment of various kinds, and our lubrication engineers have made exhaustive tests on our own equipment, the results of which are offered to all users of lubricating oils.

And if you are having trouble with the lubrication of any particular bearing in your plant, our engineers will be glad to study your problem and furnish you with an oil that will solve it. Just ask us.

Humble Oil & Refining Co.

HOUSTON, TEXAS

Producers ~ Pipe Lines ~ Refiners ~ Marketers

"INCREASED GRAVITY"

SMITH & POLHAMUS
OIL PRODUCERS

EUREKA, KANSAS

April 28, 1925.

Mr. F. C. Canniff,
Representative, Smith Separator Company,
Eureka, Kansas.

Dear Sir:

Several days ago, you were in our office inquiring about the Smith Separator we purchased from you some time ago, regarding the way it was working and if it was satisfactory.

This is the best of its kind without a doubt. When we installed this Separator, we were bothered with quite a large amount of B. S. and this Separator has practically eliminated this waste.

Another feature I want to tell you about is regarding the raising of the gravity of our oil. Before this was installed, we were shipping from 39 to 41 gravity oil. On our last statement from the refinery, I notice we sold 12 tanks of 42 gravity oil. What you said regarding the raising of the gravity was true, although it was hard to believe at the time you made the assertion. You can readily see what this Separator has made for us already. It increased the gravity and that gives us .10 cents more per barrel at the present market price, and on the 12 tanks it would make us something like $240.00. That nearly pays for the separator.

Just as soon as we can get to it, we are going to install some more of these separators on the rest of our leases.

Hoping I have given you the information you wanted, I am

Very truly yours,

Smith & Polhamus.

By Wayne M. Cruzen
Secy.

Here's convincing evidence of the ability of Smith Separators to increase your profits by giving you perfect separation and put your oil in your stock tanks at the highest possible gravity. Ask for descriptive bulletin.

TYPES

Type No. 10 — Capacity 25,000 bbls. oil, 100 million cu. ft. gas.

Type No. 1—Capacity 5,000 bbls. oil, 10 million cu. ft. gas.

Type No. 2—Capacity 2,000 bbls. oil, 5 million cu. ft. gas.

Type No. 3—Capacity 500 bbls. oil, 1 million cu. ft. gas.

SMITH SEPARATOR COMPANY

TULSA, OKLA.

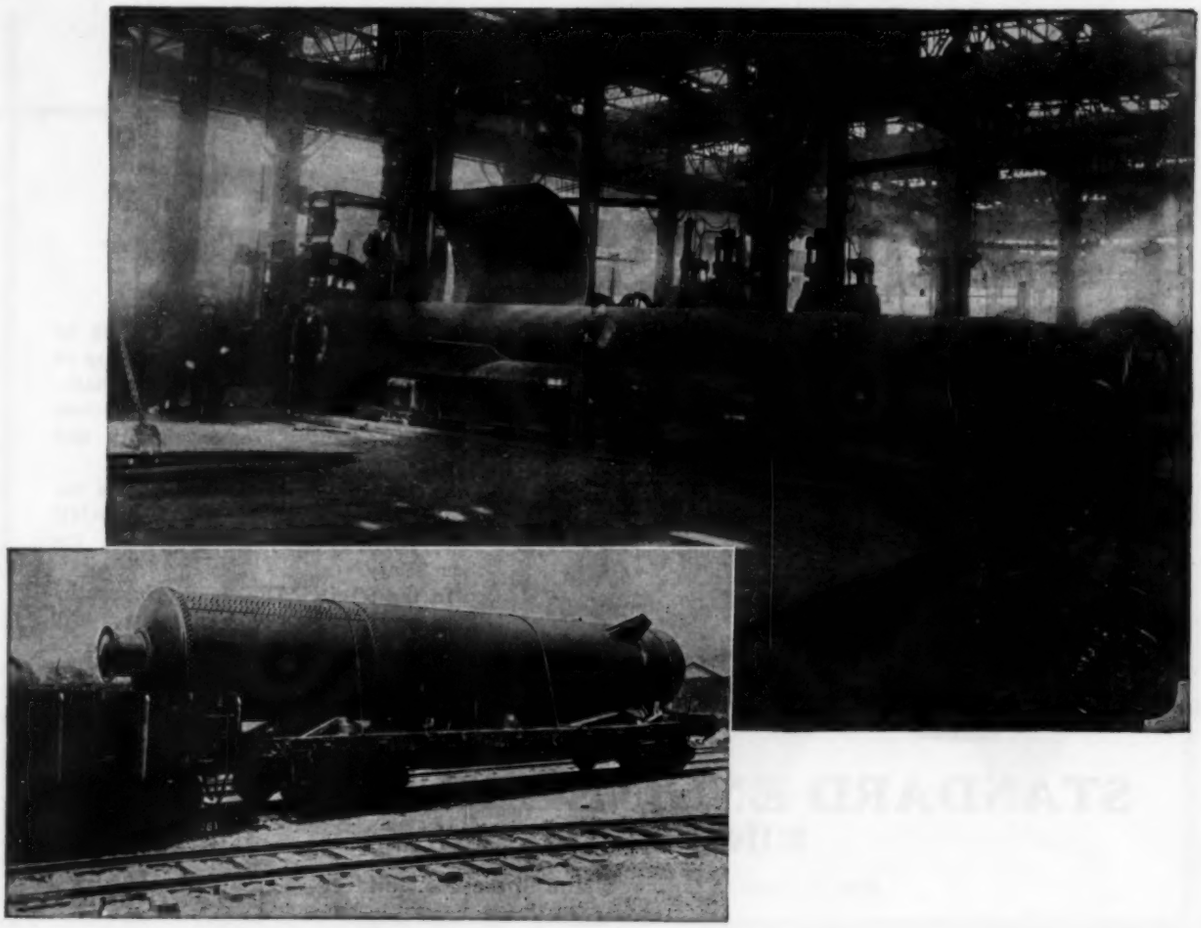
Chestnut & Smith Corp. Bldg. Telephone 6221 Texas Office:
5400 Columbia Ave., Dallas, Texas

New York Office
Export Representative:
Oil Field Equipment Co.
30 Church St., New York
Cable Address: "Oilfield" N. Y.

California Office:
2041 E 38th St., Los Angeles, California

London Office:
Perkins & MacIntosh
Petroleum Tool & Boring Co., Ltd.
25 Bishopsgate
Cable Address: "Oleborers" London

Say you saw it in The Oil Weekly



7 ft. x 35 ft. Bubble Tower

THE SECOND LARGEST ROLL IN THE WORLD

Behind a tank record of 2,000,000 barrels of storage in little more than three weeks must be extraordinary production facilities.

This 35-foot roll (the second largest in the world) is in keeping with other equipment of the P. I. W. Plants.

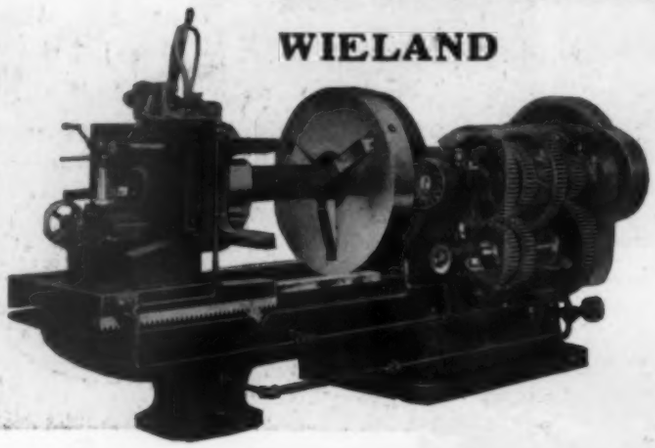
The Petroleum Iron Works Co.
Sharon, Pa.
Branch Plant—Kansas City, Kansas
Branches: New York St. Louis Tulsa
Houston Beaumont

P.I.W.
STEEL PLATE CONSTRUCTION

Say you saw it in The Oil Weekly

Have You PIPE INSURANCE?

WIELAND



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